

COAL AGE

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No. 15

How About It?

Have You in your capacity as a mine official so exercised your authority that the company you govern, or the mine you control, is noted for its just administration? Is your concern spoken of as an enterprise where each employee may count on being valued as something more than a machine?

Have You learned that reputation must be the fruit of a man's own exertions? A good name is not a matter of chance. An individual cannot possess it by patrimony or a corporation purchase it with money. It is always the reward of good principles and honorable conduct. It is the key to many a locked door that has much within.

Have You taken every precaution to safeguard all the men who work on top and all who work underground? Or is your mine one where the wives of the miners spend each day in suspense until the last trip has been run and the last cage hoisted? A safe mine and a happy home insure a permanent workman.

Have You allowed yourself to get in a rut and become a creature of habit content with letting well enough alone? It is so much easier to prevent a calamity beforehand than to mend it afterward. Patient preparation is permanent power. The higher we hope to build, the lower we must sink our foundation.

Have You lost interest in details? No man is less brilliant in life because he pays attention to the little things. Details are the mortar that binds the walls of your operations. A man's interest in the things about him decreases in direct ratio with his ignorance of them. Out of touch means out of sympathy—a feeling the men soon sense and reciprocate.

Have You discovered that it is in your power to prevent those of your men who occupy small positions from feeling that they are small men? A fellow can be big inside even if he is small outside. Unless a boss exhibits understanding and sets a proper example, the men soon form the habit of slighting a job because it is apparently unimportant. Such a policy leads to habitual neglect and results in the whole force degenerating insensibly into bad workmen.

Have You found that every leader attracts to himself men of kindred character—that to know the class of workmen at a mine you need only know the type of boss in charge? Real leaders live outside of themselves. They maintain a close touch with the masses, mingling with their people until they know the vicissitudes of their lives—their griefs and disappointments, as well as their hopes and aspirations.

Have You tried to force safety and first-aid ideas on your men, or have you first secured their interest in your plans and thus gained their cooperation? Have you caused your miners to form a representative safety committee of their own at each plant? Such a plan is the one best way to sell the safety idea to your employees. Workmen will often listen to their comrades when they would be suspicious of the intentions of the boss.



Safety and Sociological Conditions in Utah

By R. M. MAGRAW

General Superintendent, United States Fuel Co., Hiawatha, Utah

SYNOPSIS—Great care is taken to forestall dust explosions, and the sprinkling and shot-firing systems are both comprehensive and effective. Formerly coal camps were camps indeed, with little provision for either comfort or appearance. Good livable houses, with light, heat and water are now the rule.

MANY articles have been written in recent years descriptive of the safety movement in the State of Utah, but practically nothing has been said on this matter with regard to the operations of the United States Fuel Co. This firm has mines at Black Hawk, Hiawatha, Mohrland and Panther. The mines have a daily capacity at the present time of approximately 5000 tons per 8-hour shift, but could produce at a much greater rate if transportation facilities were adequate.

Safety has always been a goal striven for by the entire staff of this organization, and to W. G. Sharp, president of the parent company, belongs most of the credit for the earliest realization of the danger from coal dust, and the consequent installation of shotfiring and sprinkling systems in some of the older mines of the state.

To the Federal Bureau of Mines and to various state mining departments belongs a great deal of credit for experimental work and propaganda along these lines, but it cannot be gainsaid that the earliest complete systems were installed in the State of Utah before the Bureau of Mines came into being. Utah operators, however, are alive to a good thing when they see it, and many valuable lessons have been learned from the Bureau of Mines.

A sprinkling system should be, wherever possible, worked in connection with the drainage system, pressure being obtained either from a tank located on the surface at a point higher than the highest workings of the mine, or by throttling the discharge line during hours when sprinkling is being done. The tank method is far preferable, as it insures an even supply of water

at all times, and should an accident occur to the pumps the sprinkling would not be interfered with for some time.

The following, quoted from operating rules of the United States Fuel Co., may be of interest, as also will be the illustration showing a section of a mine map with sprinkling pipes outlined. This map is extended every three months.

All mines shall be kept in a moist condition at all times. This rule covers old workings as well as active workings.

To be considered moist no dust shall be in suspension at any distance greater than 50 ft. from the working face. Fine coal shall ball when squeezed by hand.

Where possible the main discharge line shall be utilized as a portion of the sprinkling system. This main discharge line should lead into a tank of sufficient size to insure a head for sprinkling purposes at all times whether pumps are in operation or not. The size of this main line is to be determined by the volume of water required by the sprinkling system, or the volume it is necessary to pump from the mine.

All side entries are to be equipped with a 2-in. line, laid on the opposite side of the entry from roomnecks with a $\frac{3}{4}$ -in. branch line for each room. Any side entry which is used as a main haulage road from which other side entries are carried should of necessity be equipped with a line larger than 2 in.; the size of line to be used in such cases to be determined by the number of branch lines which will be taken from the main. The object of the 2-in. line is not only to supply an ample volume of water for sprinkling purposes, but to furnish adequate head in case of fire.

All rooms and entries and any unclassified working places are to be equipped with a $\frac{3}{4}$ -in. line carried as close to the face as the proper shooting of coal will permit. At the end of each branch line a $\frac{3}{4}$ -in. bib and about 15 ft. of hose are to be placed, so that the miner can sprinkle with ordinary pressure for a radius of about 90 ft. from the face.

Bibs are to be placed on main and branch lines at 275-ft. intervals.

Sprinkler is to have 125 ft. of $\frac{3}{4}$ -in. hose in continuous length.

A valve is to be placed immediately outside of the tee on every branch line, and if a line is 1000 ft. or over in length, valves are to be placed at 1000-ft. intervals.

To facilitate sprinkling in back entries, a branch shall be run part way through each crosscut, said branch to be equipped with valve and bib.

In connecting $\frac{3}{4}$ -in. lines to larger lines, it will be permissible to drill and tap pipe sleeve instead of using a cast-iron tee.

The cost of operating a sprinkling system such as is outlined in the foregoing, where water is obtained from the mine, is as follows: Labor 1.48c. per ton; material, 0.79c. per ton; a total of 2.27c. per ton.

The shotfiring system is really an adjunct of the sprinkling system, as it is intended to minimize the danger from coal dust. The following quotation from company rules in a measure describes the method of operation (see upper right of Fig. 1 for system of carrying wires and connecting shots):

Permissible powder only shall be used in coal. In rock the powder used to be designated by the management.

Miners shall not be allowed to take into the mine more than 10 sticks of 1½-in. permissible explosive for each man;

quantity at any future date. All powder or caps returned from the mine must be immediately placed in the magazine.

In all cases coal must be undermined at least 6 in. beyond the back end of holes drilled for blasting purposes.

Drill holes in rooms must not be less than 12 in. in the clear from the rib, and in all undermined narrow work holes must not be less than 6 in. from the rib.

No hole must be fired that is less than 3 ft. nor more than 6 ft. in depth (except where intrusive rock is encountered, in which case holes may be drilled on the solid at such an angle, however, that coal or rock will have an opportunity to break).

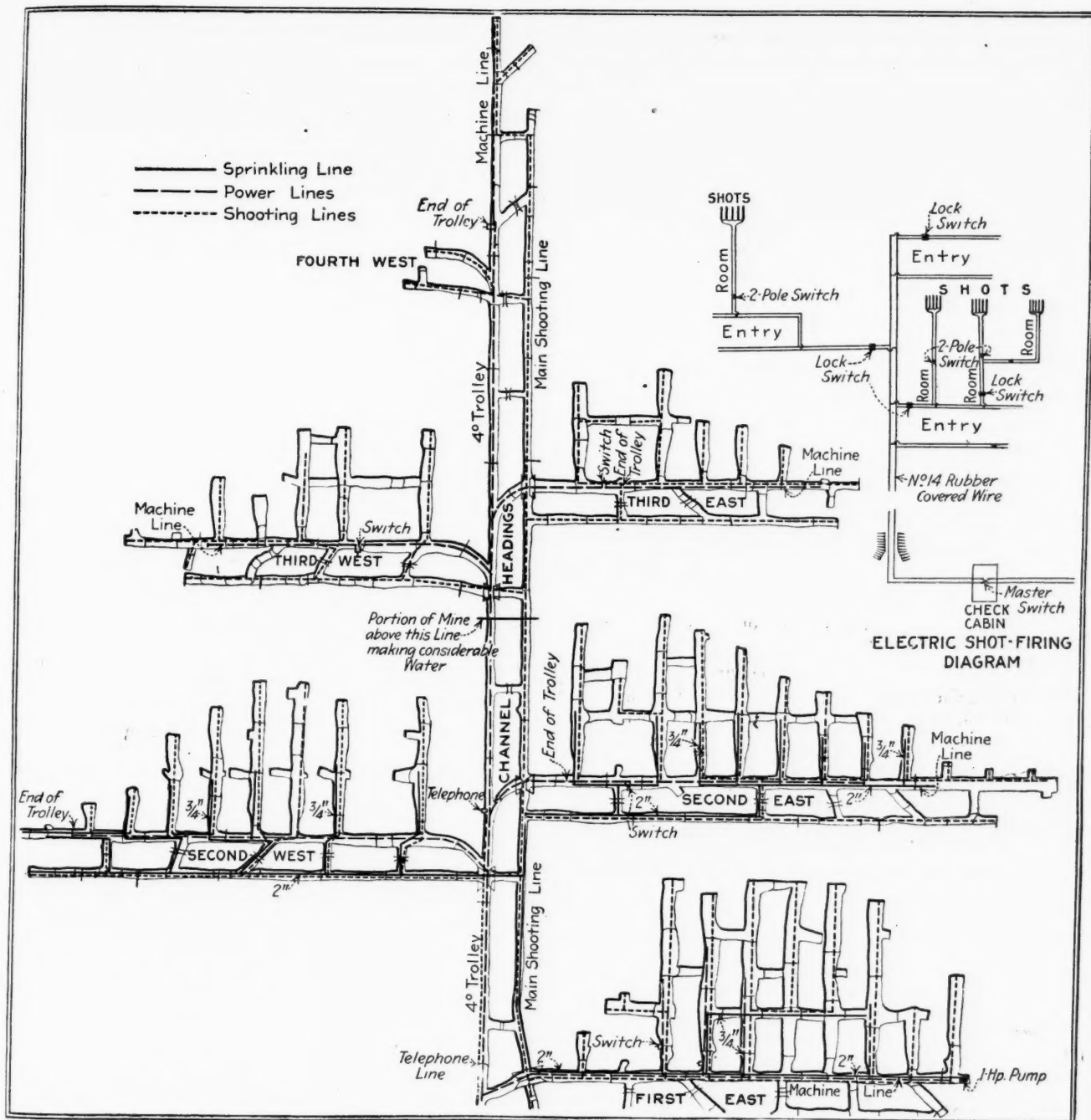


FIG. 1. SECTION OF MINE MAP WITH SPRINKLING PIPES, POWER AND SHOOTING LINES OUTLINED

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No surplus powder shall be left in the mine, but the same must be taken out and delivered to the checkman, who will issue a receipt for it, such receipt being good for a like

All coal dust must be thoroughly scraped out of drill holes before they are charged with powder.

All machine cuttings must be shoveled back far enough from the face so there will be no danger from a blowout shot igniting them.

The face and entire surroundings must be thoroughly wet down by the miner, contractor or whoever is responsible for the loading of holes or preparation of the shots before leaving the place.



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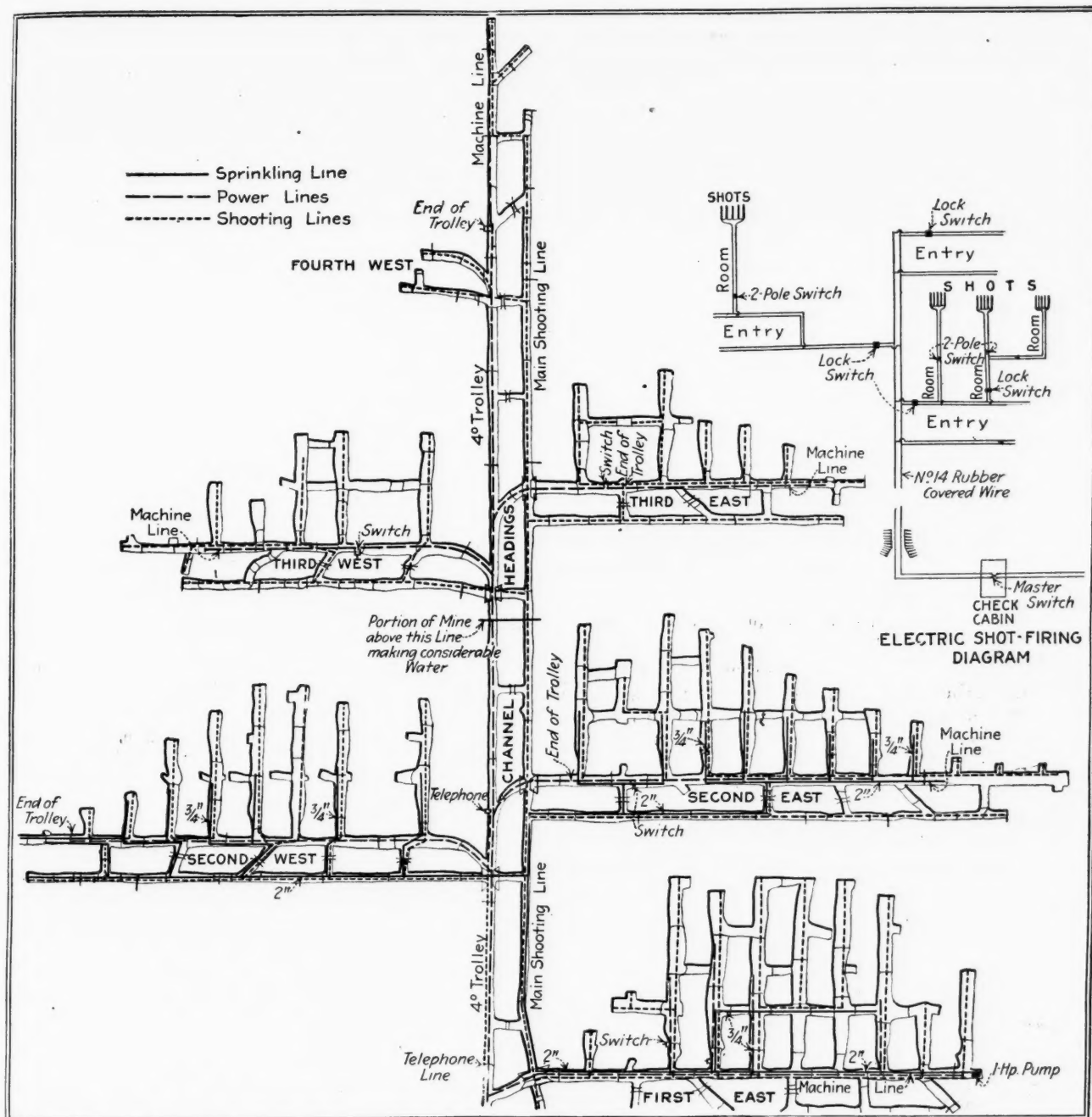


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The face and entire surroundings must be thoroughly wet down by the miner, contractor or whoever is responsible for the loading of holes or preparation of the shots before leaving the place.

No hole must be charged with more than $3\frac{1}{2}$ sticks of $1\frac{1}{2}$ -in. permissible powder, and under no circumstances must holes be charged with more powder than is necessary to break the coal.

Earth tamping alone shall be used and all holes must be tamped to within 6 in. of collar of hole. Tamping sticks shall be of wood $1\frac{1}{2}$ in. in diameter and at least 7 ft. long. No other tamping instrument will be permitted.

The use of coal or coal dust for tamping is strictly prohibited in either coal or rock.

A plentiful supply of earth tamping kept in a tub or box, furnished by the company, shall at all times be within a reasonable and safe distance from the working face.

No shots shall be fired unless all places contiguous thereto are in a wet condition so that there is no danger from a windy or blownout shot.

Page 13, Sec. 13, Mine Laws of 1911, reads: "The charge of powder or any other explosive in coal, slate or rock which has missed fire shall not be withdrawn or the hole reopened, except where such holes are tamped with wet wood pulp."

In case of missed shots which cannot be fired, a new hole shall be drilled at least 12 in. away from missed hole, and fired.

The shot inspectors will refuse to allow any holes to be fired which in their judgment may be dangerous, whether the circumstances are fully covered by the rules or not.

The firebosses, shotfirers, safety foremen and others concerned will see that the foregoing rules are strictly carried out.

Any of the above rules which conflict in any way with state mining laws are void.

All men entering mines are checked in and out, and shots are not fired as long as a check remains on the board. If a man remains in the mine, or inadvertently goes home without checking out, it is the duty of the shotfirer to personally locate him before shooting. To facilitate the work of the shotfirer the check boards are equipped with a card system giving beneath each check the owner's name, working place and residence.

HOLES CANNOT BE LOADED WITHOUT KNOWLEDGE OF INSPECTOR

Electric detonators, 6X strength, with 6 ft. of copperized iron wire are used. These detonators are not issued to the men at the powder magazine, but are carried by the shot firers in a strongly constructed sole-leather knapsack with compartments holding five or six detonators each. Detonators are issued to the men in

their working place after holes, which they have drilled have been inspected and accepted by the shotfirer. Thus there is no opportunity for a man to load an improperly drilled hole without the knowledge of the inspector.

The mine fan is closed down during the time of shotfiring, and shots are fired from the check cabin by throwing a switch, which is held in for about one second. The fan is then started, and after an interval of about 30 min. an inspection of the mine is made, shotfirers and inspectors using safety lamps and electric hand lamps. Should an entire district fail to go, the shotfirer, after inspecting the rest of the mine, attempts to locate the cause of failure, which is usually found to be defective wiring. After making repairs, the shotfirer goes to the surface and throws the switch again, to shoot the district separately. It seldom occurs that an entire district fails, and in fact the percentage of missed shots is negligible, being less than one-half per cent.

The cost of operating the shotfiring system is: Labor, 1.69c. per ton; material, 0.65c. per ton; total, 2.34c. per ton.

Manways are maintained in the different mines, and instead of a series of doors to constitute air locks where return air courses are crossed, overcasts are used to carry the return air over the manway, which is used as an auxiliary intake. The cost of steel doors with concrete settings would amount to much more than the cost of an overcast, and there is the added advantage of the additional intake as well as greater safety to men and animals using the travelingway. Brushing for overcasts is nearly always in coal, hence the reasonable cost.

Electricity is used extensively, the voltage being 250 direct current. All trolley wire is placed at least 7½ ft. above the rail. Feeder wires are supported from the roof, as are also the negative wires where these are used. All locomotive haulage tracks are bonded.

Main haulage roads are laid with 60-lb. rails. Room entries, where gathering motors are used, are laid with



GENERAL VIEW OF ONE OF THE MODERN CAMPS

40-lb. rail, as are also many of the entries where horse haulage prevails. Thirty-pound steel is standard for rooms. All frogs and switch points are made in the central shop to a standard design. Frogs are riveted securely to heavy plates and both frog and switch points are planed to line, as it is believed that good track is not only desirable from an efficiency standpoint, but from one of safety as well.

The mines are nongaseous, but inspections are made just as rigorously as though gas existed. In addition to the regular force of firebosses and shot inspectors, the company employs a general mine inspector, whose duties involve semimonthly inspections of all mines, as well as giving instructions in first-aid and mine rescue work. An instruction car is maintained, which is well stocked with supplies and apparatus at all times.

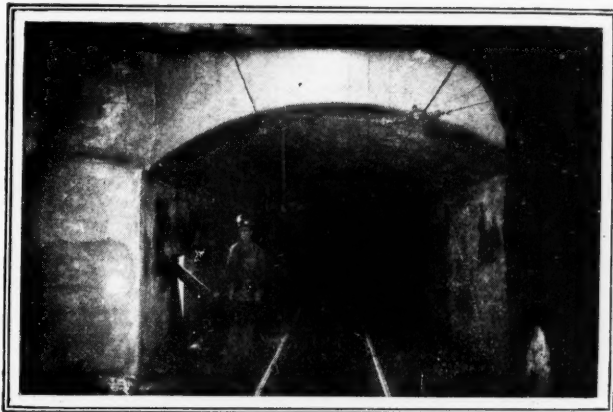
Monthly meetings of superintendents, foremen, firebosses and others are held, at which the question of safety is always given a prominent place. Suggestions are asked for, and if considered sound, are referred to different department heads for attention. At the next meeting reports are called for, and during two years' time innumerable valuable suggestions have received attention. Fan belts and practically all other belts running close to the floor in travelingways have been guarded. Overhead belts 6 in. or more in width are protected by guards. Gears have been covered, railings have been constructed, and numerous other safety precautions have been inaugurated.

CARELESSNESS IS A CAPITAL CRIME

The editor of *Coal Age* states that "carelessness today is a capital crime," which is granted; but as long as the human animal is engaged in industrial pursuits there will be a preponderance of those accidents directly attributable to carelessness. Another fruitful source of personal injury can be traced to the increased use of mechanical appliances, both underground and on the surface, while the grave labor shortage existing at the present time will undoubtedly lead to the employment of more and more mechanical devices, with a consequent increase in the accidents from this source. It is questionable, however, whether the total number of accidents will be increased, as greater efficiency will undoubtedly tend to regulate the ratio of accidents to tonnage, and will probably reduce rather than increase the ratio of accidents to total number of employees.

Sociology, as applied to coal mining, is a comparatively recent term, it having been thought, up until a few years ago, that anything was good enough for a mining camp. I well remember many camps in several of the greatest coal-producing states, which only a few years ago were constructed all on the same model, painted all the same color (usually the conventional box-car red), littered all with the same assortment of cans, garbage, etc., and showing the same lack of vegetation.

Many of the houses were constructed of 1 x 12 hemlock with 1 x 4 battens and without studding, the upright boards supporting the second story. No plaster or ceiling was thought necessary, and the *Police Gazette* and other kindred publications served as wall paper, and incidentally as a hiding place for the sportive little *cimex lectularius*.



A CONCRETE OVERCAST

It is customary when building a camp to set the houses on posts in lieu of foundations, and whenever possible standing stumps were utilized. The monotony of many a row was broken by the zeal of some economical genius who would shift a house out of line in order to corner it on a stump and thus save cutting a post for the corner.

Since the word sociology has been added to the coal-mine lexicon, however, wonderful progress has been made, and the newer camps and many of the older ones have been made as habitable as conditions would permit.

The houses in the camps of the United States Fuel Co. are all plastered, nearly all supplied with water, quite a number with baths, all with electric lights and quite a few with steam heat. Four-roomed houses with water and electric lights rent for \$9.50 per month. Four-roomed houses with bath, lights and water, \$12 per month. Larger houses are rented on the same basis.

Garbage cans are supplied to all houses, and are emptied at least twice each week. Streets are lighted by 250-watt nitrogen-filled lamps, spaced about 300 ft. apart.

Several hundred trees have been donated by officials and planted throughout the camps. War gardens and lawns are the order of the day, notwithstanding the fact that the altitude of the camps range from 7200 to over 8000 ft., and that the country is a desert unless irrigated.

A hospital, capable of accommodating 15 or 20 patients, is nearing completion. A nurse will be employed constantly, who when no patients are in the hospital will perform welfare work among the families of the foreign employees.

An amusement hall is under course of construction that will supply the needs of two of the camps which are close together. It will contain bowling alleys, billiard and pool tables, card tables, gymnasium, shower baths, etc., in the basement. Above will be an auditorium with stage, ladies' rest room, dressing rooms and moving-picture machine.

A rifle club at one of the camps owns its own building, which at the present time is also used as a dance hall and picture house. Good baseball teams are supported and tennis courts are maintained at each of the camps. The tennis honors were carried off for several years by the Japanese boys at one of the camps.

Bathhouses at each of the mines are planned for the near future, as are improved amusement halls at the camps which now have inadequate facilities.

Design of Small Mine Hospitals*

By O. L. PUCKETT AND J. B. DEHART

Northern American Collieries, Ltd., Lethbridge Colliery, Coalhurst, Alta.

SYNOPSIS—*The article discusses hospitals costing from \$1300 to \$7000, with a cost per bed varying from \$217 to \$633.31. Due consideration is paid to the essentials of general design, though building details are not considered because the materials of construction are similar to those in use in dwelling houses.*

SOME months ago the North American Collieries, Ltd., contemplated the building and equipping of a hospital for their employees at Coalhurst, Alta. Coalhurst is an incorporated village with a population of about 1500 persons. In the winter the mine employs about 600 men. Each employee pays \$1.50 a month, \$1 being for medical attendance and 50c. for hospital charges. These payments secure medical attention and hospital care, not only for the employee, but also for his wife and family. Generally speaking, the system just described is that in vogue throughout Alberta.

The amount of money that the company was able to spend was limited and consequently economy was an important feature in the design of the building. The plans were prepared by the company's engineering staff in consultation with the doctor. It was found that little information could be obtained on the design of small hospitals. The designs that had been published in the technical journals were too large and costly for the requirements of a town like Coalhurst.

Through the courtesy of the officials of the respective companies, we secured from other mines plans of several small hospitals. These were carefully studied. The purpose of writing this paper is to give the benefit of our experience and possibly assist anyone else who desires to erect a similar building.

Any company which can afford an expensive hospital will no doubt have it designed by expert architects. The cost becomes a secondary consideration and in such a building many desirable features which in a small hospital are classed as unnecessary could, and rightly should, be included.

When designing a hospital the following points should be kept in mind: The wards should be well ventilated, lighted and heated. The windows in the wards should be so arranged that they come between the beds so as to prevent drafts on the patients' heads. Windows about 6 ft. center to center should fill this condition. The passages and stairways must have room enough for the transportation of patients on stretchers wherever necessary.

The operating room should be as centrally situated with respect to the wards as possible and must have a large skylight. The operating room should not be smaller than 10 x 12 ft. There should be a dressing room next to the operating room. By putting the bathroom next to the operating room it can be made to serve both as a dressing room and a bathroom. The

kitchen should be located as centrally as possible with respect to the wards and to the nurses' living room, so as to reduce to a minimum the distance which meals have to be carried. The kitchen should be large enough to allow the setting out of trays with the patients' meals.

There should be a veranda for convalescent patients. Wherever possible waste space should be utilized for closets, as a lot of bed linen and other like material must always be kept in a hospital.

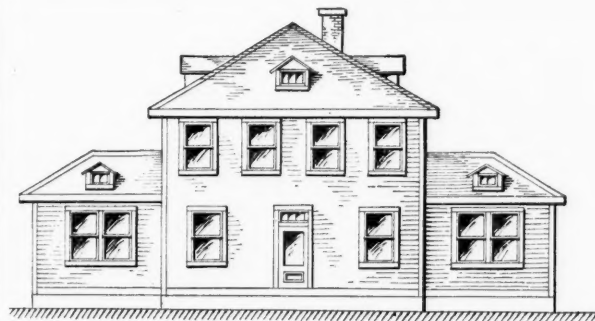
Generally speaking, the ward in a small hospital that is most economical of space is of rectangular shape and about 16 ft. wide. When its width is of this dimension it is possible to have a row of beds on each side standing out from the walls and a 4-ft. passageway down the center between the feet of the beds.

Figs. 1, 2, 3 and 4 show the floor plans and front and side elevations of a hospital that is in use at one of the large mines in Alberta. This town is situated a considerable distance from any large town and is therefore entirely dependent on its own hospital accommodation. The good points of this design are: Easy access to the operating room from the ward; ample closet room; a commodious store room; a pantry; a large nurses' room.

ON THE other hand, the design is open to criticism because of the large amount of waste space. There are, on the ground floor alone, three halls, a receiving room, a hall proper and a waiting room. The operating room is not provided with a dressing room. The supply room might easily have been made smaller and part of it used as a dressing room, or, again, the supply room might have been substituted for one of the numerous halls or for the spare room on the second floor. The washroom next to the ward may almost be considered as a luxury because in most of the cases at a mine hospital the patient is taken straight to his bed or to the operating table. The center hall downstairs apparently has no light from natural sources. The main ward is a little too narrow for two rows of beds. Thus equipped with beds occupying 6 ft. each, there is only 2 ft. 6 in. left for a passage down the center. The windows are spaced so that the heads of the beds when arranged evenly in a row will come between windows and, as mentioned before, this is a good feature. Taken as a whole the hospital would seem to have limited accommodation for patients when cost is taken into consideration. It would appear that the money spent on rooms not absolutely needed might have been more advantageously used to increase the accommodation for patients.

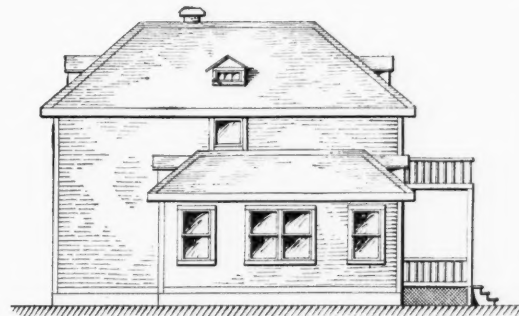
A small female ward 10 x 19 ft., giving ample room for three beds, could have been substituted for the receiving room and washroom by cutting off a small area of the main ward. The closet next to what is the receiving room could have been converted into another toilet, opening off this ward, and female patients would be transported without difficulty from the ward to the operating room or vice versa. It would seem that such a ward, in an isolated camp, would have been far more useful than the present receiving rooms and washrooms.

*Paper read before the Canadian Mining Institute.



FRONT ELEVATION

FIG.1



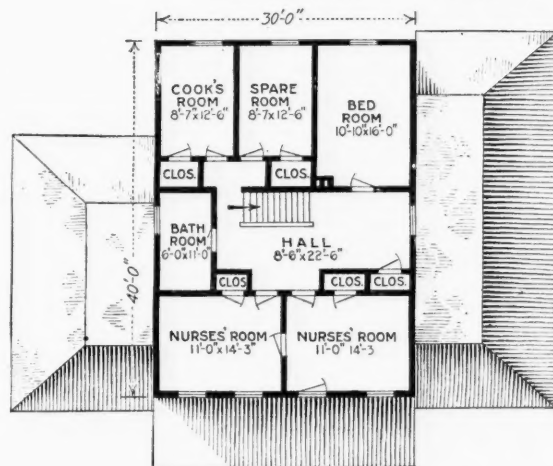
SIDE ELEVATION

FIG.2



FIRST FLOOR PLAN

FIG.3



SECOND FLOOR PLAN

FIG.4

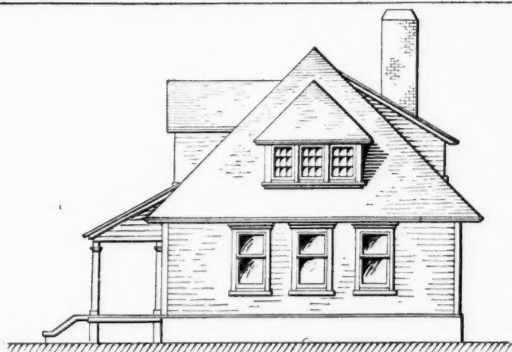


FIG.5

END ELEVATIONS

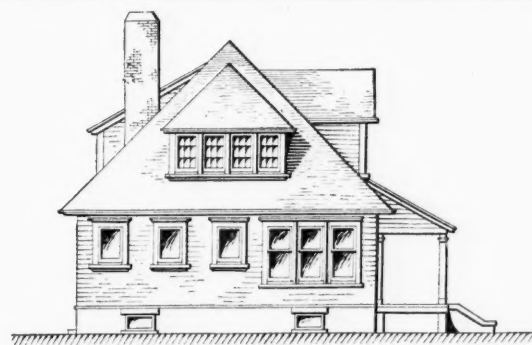
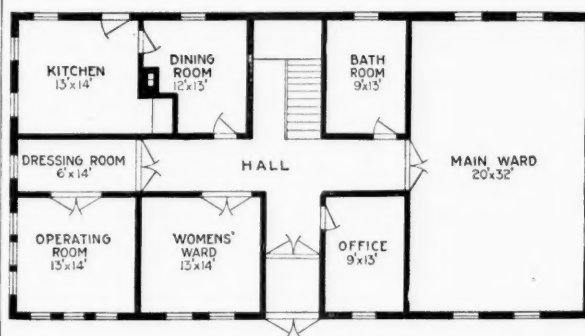
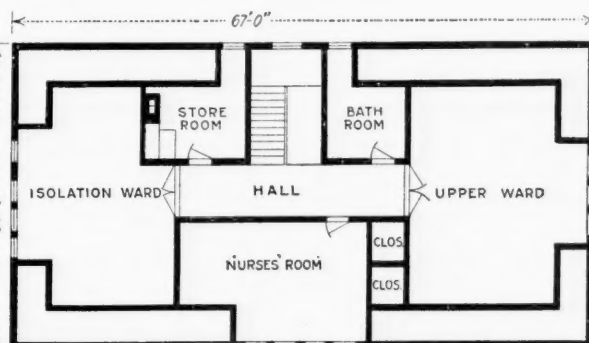


FIG.6



FIRST FLOOR PLAN

FIG.7

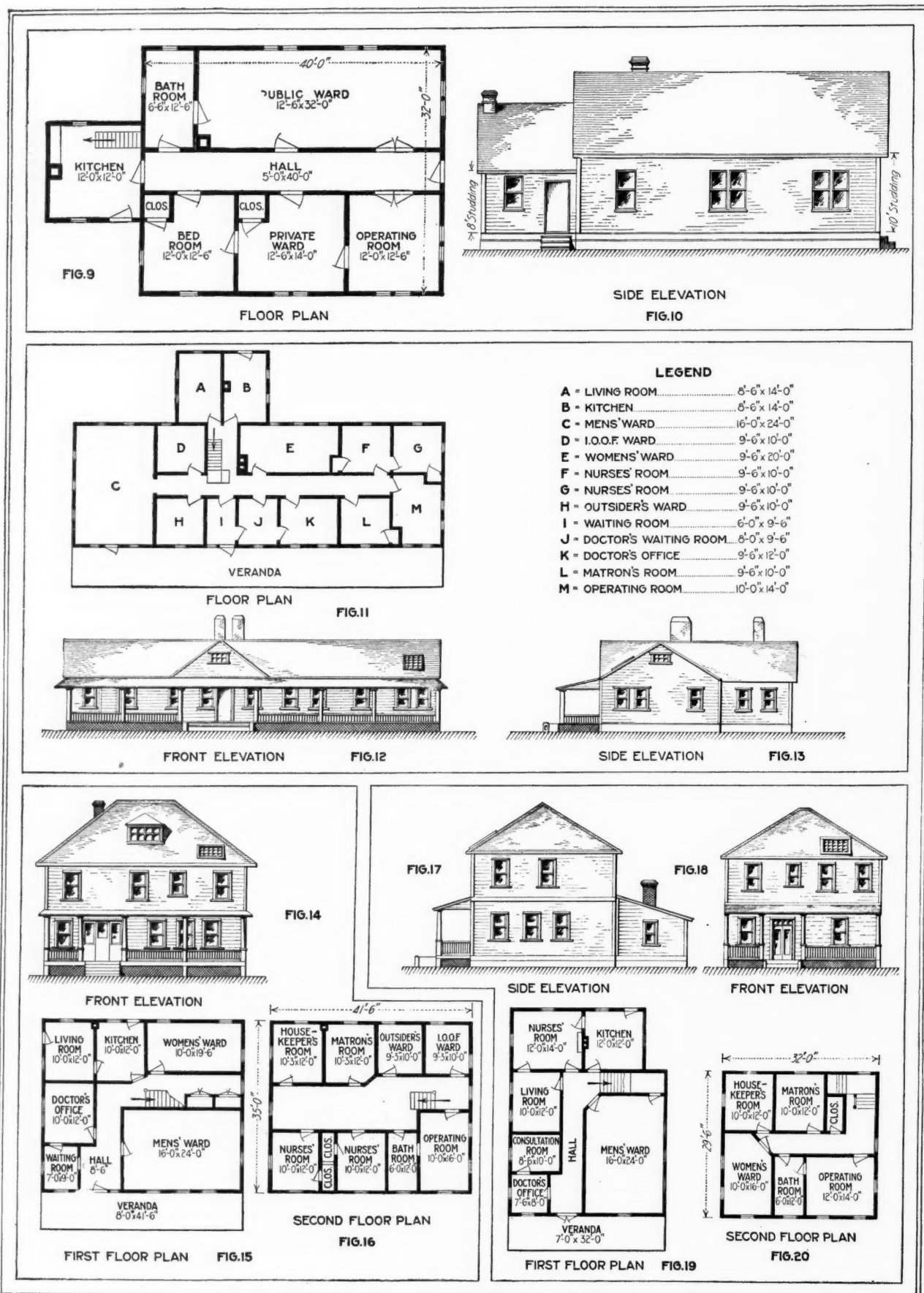


SECOND FLOOR PLAN

FIG.8

FIGS. 1 TO 8. FLOOR PLANS AND ELEVATIONS OF SOME SMALL MINE HOSPITALS

Figs. 1, 2, 3 and 4 show floor plans and front side elevations of a hospital at a large mine in Alberta. Figs. 5, 6, 7 and 8 show plans and elevations of a hospital at one of the mines in the Crowsnest Pass



FIGS. 9 TO 20. ELEVATIONS AND FLOOR PLANS OF SOME SMALL MINE HOSPITALS

Figs. 9 and 10—Plan and elevation of another mine in Crowsnest Pass. Figs. 11 to 13—One of three designs drawn up by engineering staff of North American Collieries, Ltd. Figs. 14 to 16—Same as preceding plan, with addition of a bathroom. Figs. 17 to 20—Like the two preceding designs, only laid out with a view to economy

The really essential parts of a hospital are the wards and operating room.

At the average mine there are offices and a lot of other buildings, but these are there merely to enable the mine itself to do its productive work. And so it is with every other concern. There is the productive part and there are accessories, necessary, it is true, for the operation of the productive part, but nevertheless not directly productive themselves. In a hospital the nurses' rooms, etc., are the accessories which, though necessary, are not directly productive, and the hospital itself may be said to consist of the wards and operating room.

The rest of the rooms are merely there that the wards and operating room may be used to the best advantage, and for this reason these departments will be called the "actual hospital." If different hospitals have equally convenient accessories in the way of nurses' rooms, etc., for the operation of the "actual hospital" then the percentage of the total floor space which is occupied by the actual hospital and the total cost of the building divided by the floor space of the actual hospital give a fair idea of the economy of the design.

OF COURSE, there are a lot of other considerations to be taken into account as well. A hospital which is suitable for one mine may not be suited to the conditions at another mine. Also it is quite conceivable that a hospital could be designed with a very large percentage of actual hospital and yet the wards and operating room might be of such a shape that they would be entirely unsuited to the purpose for which they were intended. All the hospitals mentioned in this paper were designed for actual use, and it must therefore be assumed that all rooms are more or less suited for the purpose for which they were designed.

Nevertheless, when comparing the different percentages and costs per square foot of actual hospital, the convenience of the whole building and suitability for the purpose for which it was designed must be borne in mind. In the design shown in Figs. 1, 2, 3 and 4, the total floor space is 3405 sq.ft. and the actual hospital constitutes 21 per cent. of this. If another ward had been built, as suggested, this figure would have been raised to 26.8 per cent. The total cost of this building excluding plumbing, heating and lighting was about \$5200, making the cost, as based on the area of the actual hospital, \$7.27 per square foot.

Figs. 5, 6, 7 and 8 show plans and elevations of a hospital at one of the mines in "the Crowsnest Pass." This is an excellently laid out building of a somewhat more elaborate design. The first cost of the building was not a vital feature, and for this reason an isolation ward was warranted. An isolation ward is not often used in such a hospital. Practically the only cases for which it would be used would be the rare ones of an infectious disease developing while a patient was in the hospital.

In could also be used for typhoid cases, but typhoid is so mildly infectious that isolation is not absolutely necessary. It can therefore be omitted from a hospital where economy of design is important. The only objectionable feature of the design is the operating room which, as shown in the drawings, has no skylight. The cost of the building including heating, plumbing and lighting was \$8759. The building itself would cost ap-

proximately \$7000. The total floor space is 3540 sq.ft. The floor space occupied by wards and operating room is 1488 sq.ft. or 42 per cent. of the whole. The cost of the building per square foot of actual hospital is \$4.71.

Figs. 9 and 10 show the plan and elevation of a small hospital which was built by the miners at another of the mines in the Crowsnest Pass. The design is not a very good one. The bathroom is a long way from the operating room, the ward is a little wider than is necessary for one row of beds and not wide enough for two rows. There is no skylight in the operating room and there is practically no accommodation for the nursing staff. This latter feature makes the building appear abnormally economical by the method of comparison adopted in this paper. The cost of the building would be approximately \$1300. The total floor space is 1424 sq.ft., and the actual hospital occupies 725 sq.ft., or 50.8 per cent. of the entire space. The cost per square foot of actual hospital is \$1.79.

Three hospital designs were drawn up by the engineering staff of the North American Collieries, Ltd. The first of these, a single-story building, is shown in plan and elevation in Figs. 11, 12 and 13. The men's ward is wide enough for two rows of beds and the women's ward for one row. There are two waiting rooms. One of these is the hospital waiting room for visitors and the other is the doctor's waiting room, to be used in connection with the doctor's office.

There are not very many cupboards and there is no bathroom or dressing room in connection with the operating room. The actual hospital floor space is 908 sq.ft. and the total floor space is 2234 sq.ft., making the actual hospital floor space 40.60 per cent. of the whole area. The cost of the building was estimated at \$3640, making a cost of \$4.01 per sq.ft. of actual hospital.

THE second design is shown in Figs. 14, 15 and 16. This building contains essentially the same rooms as the first with the addition of a bathroom. Being a two-story building, the foundation and roof costs are less. On the other hand the rooms are a little larger and there is more waste space. The estimated cost is \$3250. The total floor space is 2905 sq.ft. and the floor space occupied by actual hospital is 924 sq.ft., or 31.8 per cent. of the total. The cost per square foot of actual hospital is \$3.52.

A third building was designed eliminating all rooms which were not absolutely necessary and laid out with a view to economy. Plans of this building are shown in Figs. 17, 18, 19 and 20. Unlike the first two designs there are no private wards, and the two nurses' bedrooms are replaced by one larger room. It was necessary to put one of the wards upstairs. The operating room might have been downstairs in place of the nurses' room, but it was thought preferable to have the operating room next to the bathroom. The estimate for this building is \$2600. The total floor space is 2200 sq.ft., and the floor space occupied by wards and operating room is 717 sq.ft., or 32.6 per cent. of the whole. The cost per square foot of actual hospital is \$3.63.

This plan seems less economical than the other designs because they are schemed for more patients, yet not so many more that they require more nurses and in consequence more nurses' accommodation. The maximum efficiency in a small hospital would be obtained if

room were required for the exact number of patients to whom two nurses could attend.

However, if this number of patients is more than need be accommodated, it is not a saving to put up a larger and more expensive building, though it might show a smaller cost per square foot and per bed. This is the condition at Coalhurst, and consequently a \$3000 building which is large enough is more economical than a \$4000 one which, though theoretically more efficient in design, is unnecessarily large. It is difficult to see how the last design could have been cut down. By omitting the doctor's office and consultation room the living room could have been moved to the front and the nurses' room to the main building, but as the doctor pays rent for his offices the extra room behind more than pays for itself.

The table following shows for the different hospitals building cost, floor space and other details. The buildings are numbered in the order in which they have been discussed. The table shows also the cost per bed when the hospital is filled to its normal capacity. In the case of hospital No. 2 the normal capacity of the isolation ward is figured as one bed because it is unlikely that this ward would be filled at the same time as the others.

Hospital Number	Total Building Cost	Floor Area, Sq.Ft.	Floor Area, Actual Hospital, Sq.Ft.	Cost per Sq.Ft. of Actual Hospital	No. of Beds Provided	Cost per Bed Provided
1	\$5,200	3,405	715	\$7.27	8	\$633.31
2	7,000	2,540	1,488	4.71	21	333.00
*3	1,300	1,424	725	1.79	6	217.00
4	3,640	2,234	908	4.01	14	260.00
5	3,250	2,905	924	3.52	13	250.00
6	2,600	2,200	717	3.63	11	236.50

* Practically no accommodation for the nursing staff.

The estimates of the costs of the buildings where actual figures were not available were all made on the same assumptions. Foundations were included, but no allowance was made for plumbing, heating or lighting. The costs of labor and material used in the estimates were as follows: Carpenters, \$4.85 per day; common laborers, \$2.47 per day; lumber, \$22.50, per thousand feet B.M.; concrete \$7.50 per yd. A 10-hour day was assumed for all the labor employed.

It is interesting to note the enormous difference between the cost per bed of these hospitals and that shown in "The Architects' and Builders' Pocket Book." The costs given in this book are, for cottage hospitals for small towns, \$1200 to \$1750 per bed. This figure includes equipment, heating and lighting, etc., but compared with those given in the table, the cost of which vary from \$217 to \$633.33, they would appear to be quite misleading.

No attempt has been made in this paper to consider the details of the building construction. Small hospitals such as have been discussed are exactly similar in construction to any other frame building, and a description of construction details would be superfluous.

Efficiency at the Face

BY CLYDE BERKEY
Hooversville, Pennsylvania

Conditions around the mines have changed much in the last two years. Old methods for gaining efficiency are inadequate. Two years ago you could take a man into a place and tell him to work it. To show him where to place timbers and clean a car or two of rock, and do whatever else was necessary to have the place timbered,

rock-cleaned, and put in fine condition, and give him the promise, "I will pay you for the time it takes to clean it up," was all that was necessary to have the work done. If the coal would not pay for the work it was better to let the place alone than to have the miner do the work without pay.

At the present time these methods will not apply. The miner expects you to be efficient, and have every place in the mine in good shape. If you have 100 bad places and want them worked you will have to do some scheming. You absolutely must have the place in shape before you attempt to take the miner in to look it over, even if you have to rout a company man out three hours before starting time to bail water and cut a little loose coal to get the place polished up before the arrival of the new miner.

I have been unable to find a scheme whereby to start new men in a bad place, under the present conditions, unless the place is made to look good, but I have found a way to get efficiency after the miner has started. The best results I have got are through the use of a blackboard at the face of each working place. This is made from two pieces of flooring 3 ft. long, bearing say the following inscription:

9/28/17 Safety First

Danger May Exist. Props Too Far from Face

Keep 4 Ft. to Face

On blackboards we try to keep before the miners the dangers that may exist. After marking them on the board, we explain the inscription to the miner. If we find the place in extra-fine shape, his face board will be marked:

9/28/17 Safety First

EFFICIENT MINER

The meaning of "Efficient Miner" is explained to the miner when he receives that mark. We also use a large board 6 ft. square on the outside, facing the tippie where each miner, as he goes to or comes from work, will see the following:

SAFETY AT ALL TIMES

The efficient miner is one who performs his work with ordinary care, and with safety for himself and others. ARE YOU IN THIS CLASS? LOOK AT YOUR FACT BOARD.

Placing these boards where any person coming to the rooms may see the miner's efficient or inefficient mark exerts a tendency for more efficient work. By giving the men at the same time personal instructions we are certain to have less accidents and increased efficiency.



NEW RIVER COLLIERIES CO.'S LARGE CLUBHOUSE
AT ECCLES, W. VA.

Accident Statistics and the Operator*

Showing How the Operator Can Help in the Reduction of Accidents by a Careful Compilation of Records and the Interchange of Safety Ideas

By ALBERT H. FAY

Mining Engineer, U. S. Bureau of Mines, Washington, D. C.

BEFORE offering any suggestions as to what the operator can do to help compile accurate accident statistics, it is well to point out some of the reasons why accident statistics are necessary. Statistics are not intended to be a record of the experience, discomfort, pains and sufferings of the employee to be handed down to future generations; to furnish statisticians with a set of figures which may be juggled to suit any peculiar whim; nor to provide data for the construction of fancy charts. These, however, are necessary adjuncts to the main purpose, which is to obtain information by which to

diagnose industrial accidents in order to determine the cause and provide a remedy. Statistical records are absolutely essential as a matter of evidence to prove the guilt of certain mechanical devices, which assault with intent to maim or kill, and to determine with a reasonable degree of accuracy the personal element entering into the cause of accidents. As in every court of justice, it is necessary to have available all the evidence, in order that proper sentences may be determined.

THERE are a few operators who have not awakened to the need of statistics and therefore feel, when asked for certain information concerning accidents to their employees, that it is a sort of inquisition being forced upon them to disclose their private business. This is far from being the case. The information is to be used for their benefit as well as for the welfare of their employees. Whatever will help human beings in a matter of health and comfort will pay good dividends to the man who provides these essentials. Sick and crippled employees in the hospital or at home are a burden to themselves, to their families, the community and the state, and are of no benefit whatever to their employers. Even though a crippled man may be employed as a pensioner, he cannot render full service to his employer.

Statistics should embody all the information available concerning each accident if the best results are to be obtained. It is not enough to know that a man fell down a shaft and was killed. Why did he fall down? Who was to blame? Was the shaft properly guarded? Could the accident have been avoided? It is the answer

THE magnitude of the mining industry may be grasped when one realizes that more than 6,000,000 men are engaged in the mines throughout the world. Of this number 3,800,000 are employed in the coal mines and 2,200,000 in the metal mines. In addition, millions more are engaged in the allied industries directly dependent upon the mines for coal and metal. Mining is one of the hazardous industries in the United States and employs over 1,000,000 men, of which 3 out of every 1000 men employed are killed each year by reason of some accident. While complete data relating to nonfatal injuries are not available, yet reports to the Bureau of Mines for all metal mines in the United States show that about 200 men per 1000 per year are injured sufficiently to cause a loss of time. A reduction of 50 per cent. in the number of mine accidents would mean a saving of 1500 lives in the United States every year, in addition to reducing the loss of time and suffering resulting from more than 200,000 nonfatal injuries.

to these questions that should be recorded in accident statistics. So long as accidents occur, it is necessary for the operator to keep correct and detailed records. He should study intelligently every accident from all angles. At the close of the year, he should take an inventory of his accident records with the object of finding out what and who was to blame for each group. Having discovered the principal causes, he should see that proper remedies are then applied; for example, should it be known that a certain type of machine has cut off a dozen fingers during the year, the remedy is not to supply addi-

tional fingers, but to devise a guard for the machine or install another type for this particular work.

If human beings were perfect, and it were possible to devise perfect machinery, there would be no need for accident statistics. A worker has a lapse of memory for an instant, and a machine moves 3 in. too far and crushes a man to death. Another did not look where he was stepping, and as a result fell down a shaft. True enough, the shaft should have been guarded to prevent the thoughtless from going into it. Lead pencils have rubbers because people make mistakes. Industries have many accidents because of mistakes; many accidents occur because of carelessness, and many because of improper mechanical devices. Mistakes are made by managers as well as by employees; both are often careless, and both are responsible for mechanical equipment—the employer in providing it and the employee in keeping it in proper condition when installed and turned over to him to operate.

IN all industries there are a certain number of accidents that are inherent, accidents for which it is impossible to place the blame on anyone. These equal about 50 per cent. in the mining industry. The responsibility for the remainder may be placed about equally on the operator and the employee, as shown by the records of the inspectors of the Union of South Africa.

In order that accident records of one company or state may be comparable with another, they should be collected and tabulated on a uniform basis, care being taken to separate each branch of the industry from all others. The number of men employed should be classified as underground and surface employees, with a corresponding grouping of fatal and nonfatal injuries

*Paper entitled "What Can the Operator Do To Aid Accident Statistics," read before the Mining Section of the National Safety Council at its New York meeting, Sept. 13, 1917.

by principal causes. Uniformity may be brought about by the standardization of state laws relating to statistics. The Bureau of Mines is doing all in its power toward this end, having had a committee draft standard rules and regulations as relating to metal mines, while one relating to coal mines is under consideration. It is hoped that state legislatures will adopt as nearly as conditions will permit the rules and regulations proposed by the bureau. The operators can help in this.

Exact records of labor are necessary. These should include the number of men on the payroll; the days and wages lost by reason of accidents, as well as the days off duty from other causes. A classification of employees by occupation is desirable, by reason of the varying occupational hazards. Inasmuch as all industrial plants do not have the same number of working hours per day or per year, it would assist very materially in the matter of comparing accident records and rates if the operators would keep a record of the time actually worked by all employees. In other words, the plant which operates on the basis of 10 hours per day should have a greater accident hazard than a similar one operating on an 8-hour basis, and a comparison of the two without an adjustment is not fair to either. The company's payroll in every case, except in contract labor, shows the number of hours for which wages are paid during the day, week, month or year. Taking the number of hours as a basis upon which to calculate the accident frequency, it is an easy matter to arrive at the number of 3000-hour or 2000-hour workers.

Comparing accidents on the basis of the number of men on the payroll is not strictly correct, although it may answer for all comparative purposes. In most cases the number on the payroll is considerably higher than the number actually at work, thus having a tendency to show in reality a lower accident record than would otherwise appear.

IF the operators are desirous of obtaining lower insurance rates than they are now paying, it can be obtained by keeping correct records of labor and all accidents, and having available sufficient proof to show that the accidents at certain plants are not as high as they are at other plants of a similar nature. The absence of records has a tendency to hold the rates higher than perhaps they should be.

The campaign of education for employees in the various industries has also been extended to the mining industry to the extent that many of the larger operators are making special efforts to educate their workmen in various ways. So far as accidents are concerned, probably the principal thing that can be done by the operator along educational lines is to see that the employees are thoroughly instructed as to the dangers which they encounter when they enter the mine, and to furnish them, through their superintendents and shift bosses, instructions as to how to avoid accidents and take care of themselves. Much of this educational work may be done through safety committees, which should consist, in part, of members from the various occupations in and about the mines, giving the miner an opportunity to make suggestions which he considers will prevent accidents in his particular department. Many of the companies have these committees actively at work, and they are meeting with gratifying results.

Another feature which might assist in accident reduction is the matter of publicity. Whenever a mine operator finds that he has discovered some means of preventing accidents in certain branches of his work, it would be serving his fellow operators a good turn if he would in some way let his ideas be known to them. Any exchange of ideas with reference to safety work among the operators of a district or community should result in much good being accomplished toward the reduction of accidents.

As a summary of what the operators may do to assist in accident statistics the following is suggested: (1) Keep exact records of accidents as to time, place, cause and result of accident along the line of the report required by the insurance companies before they pay a claim. (2) Keep detailed records of men employed, days worked, as well as shifts and wages lost by reason of accident. It will assist materially in obtaining the proper insurance rate. (3) The standardization of mining laws, rules and regulations so that all companies will be required to render to the state mine inspector the same type of report. (4) Coöperation with state and Federal agencies. This will not be a difficult task when all the facts appear in the operators' records. (5) Spread the safety-first propaganda as much as possible in any manner whatever whereby an interest may be created among the employees, and in this connection make public your methods of accident prevention. (6) Prevent accidents as much as possible to the point of elimination, and then there will be no need of statistics.

Mine Workers Handy in a Cyclone

After a recent cyclone which occurred in the southwestern part of the country, late on the afternoon of Friday, June 1, 1917, miners' first-aid crews from mines some 40 miles from the scene of the disaster rendered good service. The railroad authorities, on being notified that the cyclone had struck Coalgate, Okla., a mining town, prepared a special train to carry nurses to that place. The miners were notified and several first-aid teams responded, equipped with working clothes and miners' lamps. As it was necessary to search the ruins for the dead and injured, these men with the pit lamps rendered valuable service in finding the dead and wounded and in rendering first aid to the latter. One of the first-aid men stated that he had assisted the doctors in dressing 30 injuries. All of these men were recently trained by the Bureau of Mines representative, and it will thus be seen that the work is of value to the community in general as well as to the miners.



RESCUE STATION, STAG CANYON FUEL CO., DAWSON, N. M.

Western Fuel Co.'s Third Annual Picnic

By J. W. JEMSON

Nanaimo, British Columbia

THE third annual picnic of the Western Fuel Co., of Nanaimo, B. C., was held at Newcastle Island, Nanaimo, on Aug. 18, 1917. About 4000 persons attended the affair, and the experience that was gained in the two former outings was summarized in this event, which was conceded the best by all those who attended.



THE LADIES HAD A FIRST-AID CONTEST

spared no expense in providing everything necessary for a pleasant outing. The weather proved ideal and was a sample of British Columbia's best. From the moment they left the scows, the picnickers had nothing to do but enjoy themselves.

For the youngsters there were swings, teeters and merry-go-rounds, and the manner in which they were patronized left no doubt that those who had furnished this feature had earned the unbounded gratitude of the little folks.

A long program of sports was carried out, and the committee was kept busy till late in the day to complete the list of events. There were races for the young and old, married and single. The chief aim of the committee was to give every person an opportunity to win a prize, so a grand lottery was arranged, each one on the grounds receiving a ticket that entitled the holder to a chance for one of the many valuable prizes. Refreshments were free, and were dispensed with a



THE CROWD OF PICNICKERS LANDING AT NEWCASTLE ISLAND; NOTICE THE SAFETY SIGNS

The colliery management gladly adopted any suggestion or scheme that was likely to interest the large gathering of adults and children, and not a derogatory remark was heard about the arrangements made for the comfort and amusement of the picnickers. To handle a large crowd is no small undertaking, but thanks to the care and "Safety-First" methods of the Western Fuel Co. not a hitch was experienced in the transportation facilities.

Those responsible for the entertainment program had made elaborate preparations, and the company had



THE YOUNGSTERS HAD AN ENJOYABLE TIME



A FEW OF THE KIDDIES WENT SWIMMING

lavish hand. Needless to say the kiddies took advantage of this to their full capacity.

The event of the day that probably attracted the most attention was the tug-of-war contest for the colliery championship, in which five teams were entered. There were some strenuous pulls, one in particular lasting over

30 minutes. The team representing Hot Mine was the victor, and holds the beautiful trophy which was presented by John Lawson, president of the Western Fuel Company.

The first-aid competition was well contested, and the work met with the appreciation of the spectators. The principal events were a five-men team event, a three-men team event and a one-man team event, and all were well contested.

To encourage the women who are interested in first aid, a special prize was donated which brought out the contestants in good force. This being a new departure, it created some speculation. The event proved a complete success and will be repeated next year.

In addition to the games and events of the day there were speeches by Mr. Fisher, representative of Fernie, B. C., in the Provincial Legislature, and the Hon. William Sloan, Minister of Mines for British Columbia.

There doubtless are many happy reunions in store for the miners of Nanaimo in the future, all of these tending to produce a more harmonious feeling between employer and employee.

The Man Who Will Not Obey

By T. EDWIN SMITH

Carmangay, Alberta, Canada

IN ATTEMPTING to make a mine as nearly safe as possible, the mine owner or underground official has to deal not only with such perils as roof, gas, water and shooting, but also with the indifference of the miners themselves. There are men who are ignorant of the dangers arising from mine work, and they will take chances that imperil not only their own lives but the lives of others. These men need to be taught.

There are those whom years of immunity have made careless and who always wait a few minutes to put up their timber; they neglect to sprag their coal or take chances with an unspragged car on a heavy grade rather than be bothered to stop and put in sprags and stop again at the foot of the grade to take them out. Such men are often cured of their carelessness by a narrow escape from a serious accident. However, after an accident many men are very often unable to take precautions again in this world, and any hope of effecting a cure by that method is a poor one.

I believe that owners of coal mines and underground officials are conscientiously trying to make the mines safe, but their efforts are often nullified by the refusal of the men under their direction to obey orders.

It has often been a matter of comment by investigators how much more willing men are to risk their lives in a certain dangerous occupation than to do other work that is perfectly safe but more disagreeable. The psychology of the thing is a puzzle, and the problem has not been given the attention it deserves. Why will men take risks that they know are risks when they can avoid them?

If it were only the contract coal diggers who do such things, we would have the explanation ready in the desire for more money. But the company men possess the same fault. They take risks that are uncalled for. I have seen men clear out an old entry, where the timbers were cracking all about them and

crawl under weak places to get a few lengths of rails, when a half a dozen ties set under the creaking timbers would have made the place safe. I have heard the fireboss give strict orders to the men to prop the sagging timbers before going under them and have seen those orders neglected absolutely. These men were paid by the hour. No one was hurrying them; on the contrary, the officials were urging them to make themselves safe on company time. Yet they refused and took desperate chances.

Timbering is not pleasant work. Men have often gone into unsafe places and come out unhurt, so they take chances. Very often they take one chance too many, and then, from the boss' point of view, the Compensation Act becomes a nightmare. Not only is the compensation payment a burden, but the loss of a workman is often serious in itself; and the indignant outcries of an outraged public demand new regulations, stricter enforcement of existing laws and new restrictions which penalize the owner still further for an employee's own carelessness.

Something must be done to reduce the accidents due to a man's own carelessness, often in direct violation of orders. Much can be done to enforce mine discipline by dismissal. However, a miner seldom cares for dismissal, as he knows he can readily get a job in another mine. The foreman hesitates to discharge a man or even to threaten to discharge him, because he knows it will take but a little thing to cause the miner to gather his tools and go elsewhere.

For the same reason, it is difficult to punish a miner for his neglect of orders, either by fines or by securing conviction under the various laws which are provided for the purpose.

The Alberta Mines Act, sec. 94, provides that "every person shall at all times obey the lawful demands or orders of the person under whose charge he may be."

This seems to cover the ground pretty thoroughly, especially as the penalty provided by the same act (sec. 128-2) is as follows: "Every other person who violates any of the provisions of this act shall on summary conviction be liable to penalty not exceeding \$50 and costs.

"Sec. 120: When any person is found guilty of an offense against this act which might reasonably have been expected to cause a serious accident or to result in personal injury, the tribunal adjudicating thereon shall be entitled to impose imprisonment with hard labor for a period not exceeding three months, in addition to any other penalty imposed, if it is shown that the offense was committed either wilfully or so negligently as to be a wilful violation of this act."

If this act were enforced strictly with respect to men who habitually refuse to obey orders, most offenses would be stamped out quickly. But there are two sources of weakness to such a policy, one inherent in the act.

Sec. 133 of the Mines Act reads: "No prosecution for a violation against this act shall be instituted except (1) by the chief inspector; or (2) with the consent in writing of the Minister; or (3) some person appointed by the Minister."

When the manager finds that an offense has been committed, he cannot take the case to the nearest justice of the peace and have the offender fined while the recollection of the affair is fresh, but must wait until one of the district inspectors can be notified and can institute proceedings.

THE other feature that prevents the enforcement of discipline is the reluctance of the officials to take steps to secure that enforcement. One case came under my observation: A miner was working about 6 ft. in advance of his timber, under a treacherous roof. The fireboss ordered him to put up timber before doing any more loading. The miner grabbed a pick and turned on the fireboss with these words: "You get to hell out of here or I will stick a pick in you."

Speaking of the event afterward, the fireboss said: "What could I do? The man is as good a coal digger as there is in the mine. We are shorthanded as it is, and if I tried to make trouble for him he would simply quit and go over to —."

Whatever the reasons, the provisions of the Mines Act designed to secure obedience have not been effective. In 1916 only four prosecutions were recorded, though the violations must have run into thousands. How many accidents occurred in Alberta that year through such refusal to obey orders cannot be known. But the accidents that occurred, which would not have occurred if the Mines Act had been strictly observed, amount to nearly 35 per cent. of all accidents for 1916; perhaps more if all the details were told.

Neither discipline nor the provisions of the Mines Act can be enforced, as long as a man can quit his job and get another regardless of whether he will obey orders or not. Some form of coöperation between various employers in each district will be necessary to prevent that. If a man is fined or suspended for disobedience of an order, some agreement will be necessary to prevent his being hired for a certain period, say two weeks following the offense. This would allow the foreman

to fine or suspend the man or to make complaint to the inspector, for the miner could not get a job elsewhere for the prescribed period.

It would be necessary in that case for the officials to exercise great care in giving their orders. They must be sure the order is plain, that it is necessary, and that its enforcement would cause no hardship. Together with this greater care in giving orders would go a stricter supervision to see that they were carried out, and it would be insisted that officials report cases of disobedience.

It would not be necessary to discipline many men in each mine. Once the men were convinced that orders were given to be obeyed, and that the men giving orders would take steps to insure obedience, most of them would be far more careful than they now are.

I believe that much of the negligence of the miners toward orders and directions is due to the fact that the officials are not sufficiently careful in stating their orders. They are not attentive in watching for disobedience and are not willing to take the necessary trouble to secure obedience. By a definite policy, which should be explained to the officials, and a closer coöperation between employing mine operators, I believe disobedience and the accidents resulting therefrom may be avoided to a great extent.

Do It Well

BY J. R. ALLARDYCE
Saginaw, Michigan

It's the man that lifts his labor mean
And gives it luster with the best;
It's the man that stamps his lot obscure
And ranks it noble with the rest;
It's the man that has it in his power,
Still drudging nobly to excel,
That puts a premium on his part—
Go, dig the ditch, and do it well!

No fact of fate, or circumstance,
The upward climbing may dispute;
The great world holds its course secure
For him who would advance a foot.
It may be in that world of yours,
Bound by some narrow trench or cell,
Broad fields for service wait your act—
Go, drive the wedge, and do it well!

Think not the trifle to your hand
Is worthless to the mighty whole—
Art built the structure, bolt and strut,
And fragmentary ore and coal
Sent forces roaring to the task
That forged the cannon and the shell;
And tore the breach whence Freedom sped—
Go, ply the pick, and do it well!

For life's to labor and to toil—
To overcome; and bloodless fields
Yield nobler conquest than the trench
That hate and havoc only yield.
And he who has one victory clinched,
Where self's obtrusive hosts rebel,
Is peer with Cæsar by that fact—
Go, force the fight, and do it well!

Why Foreign Miners are Restless

By ELLEN PHILLIP MURRAY

Assistant Editor, "Hungarian Miners' Journal," New York City

AS assistant editor of the *Hungarian Miners' Journal* for the past three years, I have had an opportunity to read letters written by thousands of miners representing virtually every section and mining camp in the United States. Since the environment, wishes and feelings of immigrant miners are identical irrespective of nationality, and furthermore since a decidedly great number of people working in the mining industry are immigrants, a discussion of their thoughts and feelings as gleaned from these letters may not be altogether devoid of interest.

The *Hungarian Miners' Journal* is bound to its readers by the most intimate ties of friendship and fellowship. Hungarian miners look upon the paper as their own, and consequently write to us with the greatest of freedom about personal problems and difficulties with employers, which we gladly adjust. For this reason I feel well qualified to speak for immigrant miners in the United States.

It is an undisputed fact that immigrant miners as a class are better workingmen than Americans. This may be explained readily by bearing in mind the bad conditions under which immigrants were accustomed to live and by taking into account the seriousness of their purpose. Naturally, they are eager to take advantage of the opportunity to earn higher wages than they had ever dreamed of before. And since most of them have a definite life purpose to effect with their savings, they turn every ounce of energy into work in order to earn all the more. Operators are well aware of this and gladly employ immigrants. The only fault they find with foreigners is that they are not steady workers and frequently change their places of employment. It is useless to try to explain this habit by their restlessness, because this assertion is groundless. The real cause should be sought for in the indifference of foremen and superintendents.

Now that the coal problem is bound up with the very existence of the nation, and there is a decided need for every miner during every working day, the problem of reducing to a minimum the loss of time resulting from change of employment is a vital one.

Superintendents often complain: "I cannot understand why immigrants will not settle down in our camp. We pay good wages, there is plenty of opportunity for work, our houses are clean and light, provided with good drinking water, baths, gardens and yards suitable for poultry raising. We offer them every possible inducement and still cannot keep them here."

We who spend our days in solving the personal problems and in adjusting the difficulties of immigrant miners can most readily point out the remedy for this complaint.

Immigrants are scorned as strangers. Hungarians and Slavs are contemptuously referred to as "hunkys," while Italians are derided as "wops." They are not looked upon as human beings with the same rights and privileges as other men. And yet people wonder why immigrants are "restless," or in other words, why they do not feel at home in the United States!

Some time ago I read a beautiful novel entitled "Slag," by James Oppenheim. In this novel the author undertakes to set forth the plight and describe the feelings of a Hungarian Slav. His great knowledge of human nature and deep understanding of the workings of the human mind enable him to accomplish his purpose with startling precision. The story shows plainly that the immigrant does indeed feel he is the scum of the country, because both the American miner and superintendent insist upon considering him as nothing more than the component part of a very necessary machine. It never seems to occur to either that foreigners have human souls and are also endowed with the natural craving for understanding, sympathy and a home; that it hurts them to the quick to be considered a migrating, homeless people who possess brawn and muscle but lack soul and mind.

THE cruelty of this unenlightened attitude toward foreigners is sadly illustrated, aside from the thousands of cases personally known to me, by recent events in Missouri. The immediate cause of the disturbances is beside the point. The fact remains that immigrants were herded together like cattle and driven out of the state. There is no excuse for debasing men to the level of brutes. No man or group of men could be so guilty as to be exposed to mob violence, for every offense against the law has its corresponding penalty, and that after a fair trial.

Operators now spend many thousands of dollars for the welfare of the miners. In a large number of camps the immigrants live in good, comfortable homes supplied with running water and baths, and surrounded by spacious gardens and yards; the mines are equipped with washing and dressing rooms; the camps are usually provided with recreation halls. They offer material inducements, but are still very sparing with kind words,



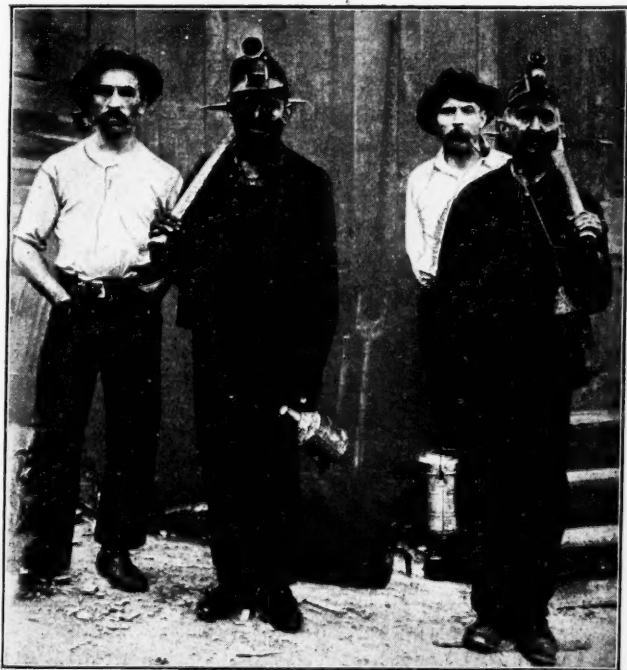
SOME HUNGARIAN MINERS AT HERRICK, OHIO

fellowship and handshakes. And yet these are the things that cost least and bring the best results.

I have come across innumerable cases where immigrant miners would prefer cheerfulness, cordiality and friendliness on the part of foremen and superintendents to higher wages coupled with indifference.

The liberality of operators in providing for the welfare of their employees is worthy of all commendation. But their own interest as well as those of our commonly beloved United States demand that we spare no pains in these trying days to increase the efficiency of the men working in the mining industry to the highest possible degree. In the pursuit of this end, employers should attempt to approach the hearts of the immigrants—if we may be permitted to express in these columns our conviction that immigrants certainly do possess hearts—to forbid scoffing at them simply because they were born in foreign lands.

Operators should direct their superintendents to observe this beautiful American maxim: "The smile wins, and usually wins the man who carries the smile." Make occasional inquiries as to whether the immigrants have any troubles or wishes. If a man is exceptionally industrious, do not begrudge him a few words of commendation; it would do no harm to send him a letter acknowledging in the name of the firm his diligence.



HUNGARIAN MINERS AT OTTAWA, W. VA.

First from right to left: A 60-year-old Hungarian miner, who earns from \$80 to \$100 in two weeks

Let superintendents and foremen recognize their men outside of the mines, shake hands with them, pay them casual visits on Sundays and show a real interest in their life after working hours.

If there is an evening school in the camp, persuade the immigrants that they forward their own interests by learning to speak English. Patiently explain that a knowledge of the English language will make it possible for them to familiarize themselves with the beautiful ideals and magnificent institutions of this glorious land, and to take better advantage of its unparalleled opportunities. Do not allow traveling agents

to exploit their credulity by the sale of worthless shares and building lots.

If the men hold an amusement for the benefit of their societies or for a similar purpose, send a representative to the amusement. Encourage immigrant societies by occasional contributions. When Christmas day arrives, see to it that unmarried men do not sit alone in a forsaken room with aching hearts and feelings of loneliness and desertion.

America's war is being fought by the miner as well as by the uniformed soldier. He sustains the man at



A GROUP OF HUNGARIAN MINERS FROM WARD, W. VA.

the front, and he should be just as well taken care of, for he too serves the country. And the poor immigrant, torn from country and friends, needs special sympathy. Give him to understand that he is not among indifferent strangers, but that the people of this country are sparing no effort to make him feel that this is his home, that its Government shields him just as much as a native citizen, and that it not only expects him to do his duty but also looks after his needs.

Greatly as the average immigrant miner suffers from loneliness and want of sympathetic friends, his claims are trifling indeed. How grateful he can be for just a few kind words! How easy it is to satisfy him! It is certain that every immigrant, irrespective of nationality, would gladly settle down in any mining camp where he senses a little attention, solicitude and friendliness on the part of the officials.

If we were asked to make special mention of Hungarian miners, we should say that any one who has had anything to do with Hungarians knows that to those who greet us with a cane we answer with a club, but that on the other hand our national tragedy, the suppression, exploitation and political dependence of our native land, are all living proofs of our unselfishness, our willingness to serve even at the expense of self-sacrifice, if rewarded with kindness.

Welfare Work of Lehigh Valley Coal Co.

By DR. S. P. MENGEL

Chief Surgeon, Lehigh Valley Coal Co., Wilkes-Barre, Pennsylvania

WHEN the Pennsylvania Compensation Law was to go into effect on Jan. 1, 1916, the vice president and manager of the Lehigh Valley Coal Co., F. M. Chase, was not satisfied with simply launching a safety-first movement in order to reduce the waste due to preventable accidents and industrial diseases, but he went a step farther and made a far more liberal contribution to the employees of the company, in the interest of their health and happiness, by extending to them the offices of a welfare, or social, nurse. It was his idea that a splendid work could be accomplished by extending to every employee and his family, in case of both accident and sickness, the services of a competent, well-trained and experienced professional nurse.

The Lehigh Valley Coal Co. employs about 18,000 men. The workings are divided into six districts, or divisions. Into each division a trained nurse was sent. Accordingly, there were six professional nurses appointed. These nurses were instructed that their duties consisted not only of professionally caring for the injured employees, but also to extend to the employee and his family their professional services in every



FIG. 1. DRESSING AN INJURED EMPLOYEE

way possible. Instructions were issued to all the foremen to have posted on the bulletin boards at the different collieries the name or names of any employee who desired the services of the nurse. It was also decided that a daily report of each accident should be sent to the nurse in each respective district, conveying the knowledge to her, the extent of the accident and whether the injured employee was taken to his home or to a hospital.

The nurse, in following up these cases, had not only an opportunity of knowing the exact condition of the injured, but was also in a position to gain a knowledge of the employee's home surroundings, his family and their mode and manner of living.

This work being new, it was rather difficult for the different nurses to develop the welfare work. To a great degree it practically depended on the individual nurse to work or look up her own cases. While the different nurses selected were those who had had experience in welfare work, and the assistant surgeons

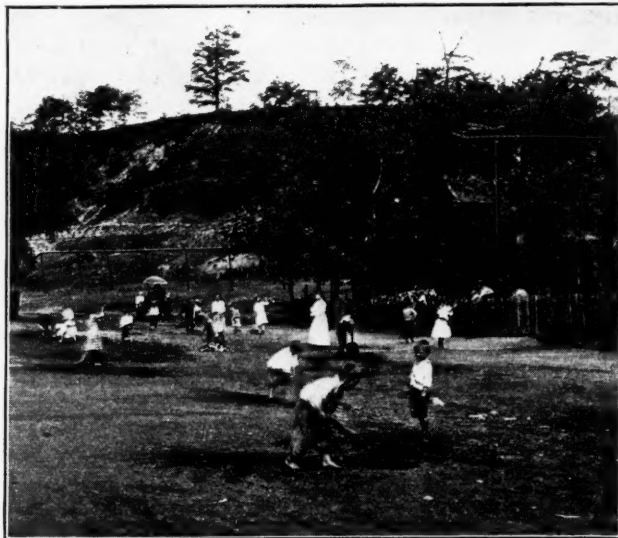


FIG. 2. NURSE AND CHILDREN CLEANING UP

were instructed to acquaint them of any illness in the families of employees, still this was far from being sufficient to keep them constantly employed. The employees at first did not understand and were loath to accept the services of a nurse. Frequently the nurse had a more difficult and arduous task in explaining her mission than in performing her professional work. This condition, happily, has been successfully overcome. The true meaning of the work seems now to be more thoroughly understood by the miners, and the nurse is now heartily welcomed and her services thoroughly appreciated.

The work these nurses are now doing consists of about 50 per cent. welfare work, and the average number of calls per day for each nurse is from eight to twelve. The territory, or districts, in which they work are large, some extending from six to eight, or even ten miles, so that these nurses have a considerable distance to cover.

Their services are available to every employee and every member of his family. They are instructed to



FIG. 3. THE CLEAN-UP BRIGADE

coöperate in every way possible with the attending physician and do what they can to assist him in the relief and care of his patient. They will not prescribe.

The opportunities for instruction in this work, especially in the families of foreigners, are great. While giving their patient a bath, making up his bed or preparing a tasty dish, the nurse incidentally calls the attention of the mother or the head of the family to the ventilation and sanitation necessary for the well-being of her child or the sick one. Incidental remarks of this kind have worked wonders in having these rooms properly ventilated and having a dirty, unsanitary room converted into one clean, pleasant and healthful.

If the patient happens to be a tenant in one of the company houses, the condition of the house is carefully scrutinized; floors, doors, plastering, plumbing and the

In these instances the nurse makes the proper recommendation to the family to call in the family physician. Recently one of the nurses informed me that she had found a child suffering from an abscess of the foot, due to a large splinter. The splinter still remained. The nurse noticed that the child's muscles were stiff and that it experienced difficulty in opening its mouth. She immediately recognized the imminent danger of tetanus and reported his condition at once to the family physician, whom she had recommended be called. The child was given anti-tetanic serum and its life saved. This is only one instance of a number showing the scope of the work that a careful, painstaking, scrutinizing nurse may perform.

In the mining districts the nurse organizes the women and children for a general clean-up day once or twice during the year. At a certain hour, usually



FIG. 4. DISTRICT NURSE GIVING CANNERY LESSON TO WOMEN OF MINING SETTLEMENT

condition of the cellar are inspected, and recommendation for repairs or improvements is made to the superintendent or general manager in case they are needed. The outside surroundings of these houses are also carefully inspected, pools of stagnant water or other unsanitary places are reported and recommendations made to the proper authorities for their removal and correction.

Special attention is paid by the different welfare workers to the care of small children, and mothers are taught how to care for their babies, especially in regard to the preparation of artificial foods and the cleansing of bottles, nipples, etc., before and after eating.

Occasionally, the nurse is called to families and finds a child or some member ill and no doctor in attendance.

an early hour of the morning, the nurse with her helpers would be on hand. All the loose debris, tin cans, loose rolling stones and filth and dirt would be cleaned up and placed in heaps. This work extended throughout every street and alley in the patch. After all this waste is placed at convenient spots, the company teams gather it up and haul it away. It is rather remarkable how this clean-up spirit permeates the inhabitants of these patches, and not alone are the streets and alleys cleaned, but the same work extends into the homes.

Another feature of the work during the past summer has been the teaching of canning and preservation of fruits and vegetables. The nurse, accompanied by an interpreter (if she does not speak the language), and equipped with cans, fruits, vegetables and the

necessary utensils for the preparation of the same, meets at some convenient place to instruct the housewives in this work. Notice of the canning demonstration or canning school is placed in the different daily papers, stating the time and place for the demonstration, and inviting any and every housewife in that district to be present. Fig. 3 shows one of the nurses giving cannery lesson to a class of attentive women.

try to cooperate efficiently to utilize coal cars to the total contributed by them equitable at the Government price. The additional amounts thus required will interfere in some cases with the prompt delivery of the full amounts called for by contracts with other purchasers. A portion of the statement reads as follows: "It is obvious that railroad fuel must be supplied in sufficient quantity to enable the railroads of the coun-



FIG. 4. SIMPSON'S PATCH, GENERAL VIEW, BREAKER IN BACKGROUND

Germ-breeding puddles in foreground are to be removed and a general clean-up campaign to improve conditions will be started

In several of the districts the nurse spends one or two hours with the assistant surgeon daily, assisting him in his surgical dressings.

During the first seven months of 1917, our nurses made 1504 welfare visits and 2266 visits to employees' homes for dressings, etc. Although this in itself represents a fair average of work for a nurse, yet it is difficult to measure the work accomplished by the mere number of visits paid. The advice and instruction given these people at each visit and in each instance represents work that cannot well be estimated.

The foundation of this work, we believe, is being well established, and the future will show the results of these efforts. We know, from experience, that our efforts in welfare work have promoted pleasant industrial relations. It has improved the condition of the miner's home, making the employees and their families healthier, happier and more contented. It has established in the employee more confidence in his employer, and above all it has been the means of narrowing the gap that so long existed (and probably always will exist) between employer and employee.

Late Washington News

[By telegraph from our Washington Correspondent]

All producers of bituminous coal along the lines of the Pennsylvania R.R. have been ordered by the full administration to contribute on a pro rata basis the coal required for the operation of the railroad. This will be followed by orders applying to other roads. Operators who already have contracts with the Pennsylvania company to supply it with an amount of coal equal to the percentage which otherwise might be required from them will continue to supply coal under their contracts and will not be affected by the order.

Other mines will be required, in addition to the amounts which they may have contracted to deliver, to furnish additional amounts sufficient to make the

greatest advantage and to carry coal by the shortest route from the mines to the consumers."

The first series of orders will distribute fuel in an orderly manner to the railroads. After this is arranged, commercial coal will be distributed by means of a second series of orders giving preference to the Government, to domestic consumers, to public utilities, and so on throughout the list.

The plan which is now made effective insures to the railroad an adequate and regular supply. This will obviate the necessity of confusion with its resultant undesirable effect among shippers of commercial coal and will also make it unnecessary for the carrier to store excessive amount of railroad coal in cars. It is confidently expected that the result of the order will be to effect an increase in the car supply.

(See pp. 635-637 for further Washington News)

A Lot More Safety Articles in Next Week's Issue

SOME of the best of the Safety and Welfare articles reached us too late for publication in this issue of "Coal Age," and they will appear in next week's number. Among these are such worthwhile articles as "How a Western Coal Mining Village Manages a Social Club," by Frank Huskinson; "Making Coal Cars in Mines Safe," by Carl Scholz; "Bureau of Mines Rescue Car," by D. J. Parker, and "Playgrounds for Mining Communities," by H. Blain Lacy. The Oct. 20 issue of "Coal Age," therefore, will be a sort of second section to the Safety, First-Aid and Welfare special that lies before you now. The third and last installment of "Strip-Pit Mining of Bituminous Coal," which was held out of this issue of "Coal Age," will also appear next week.

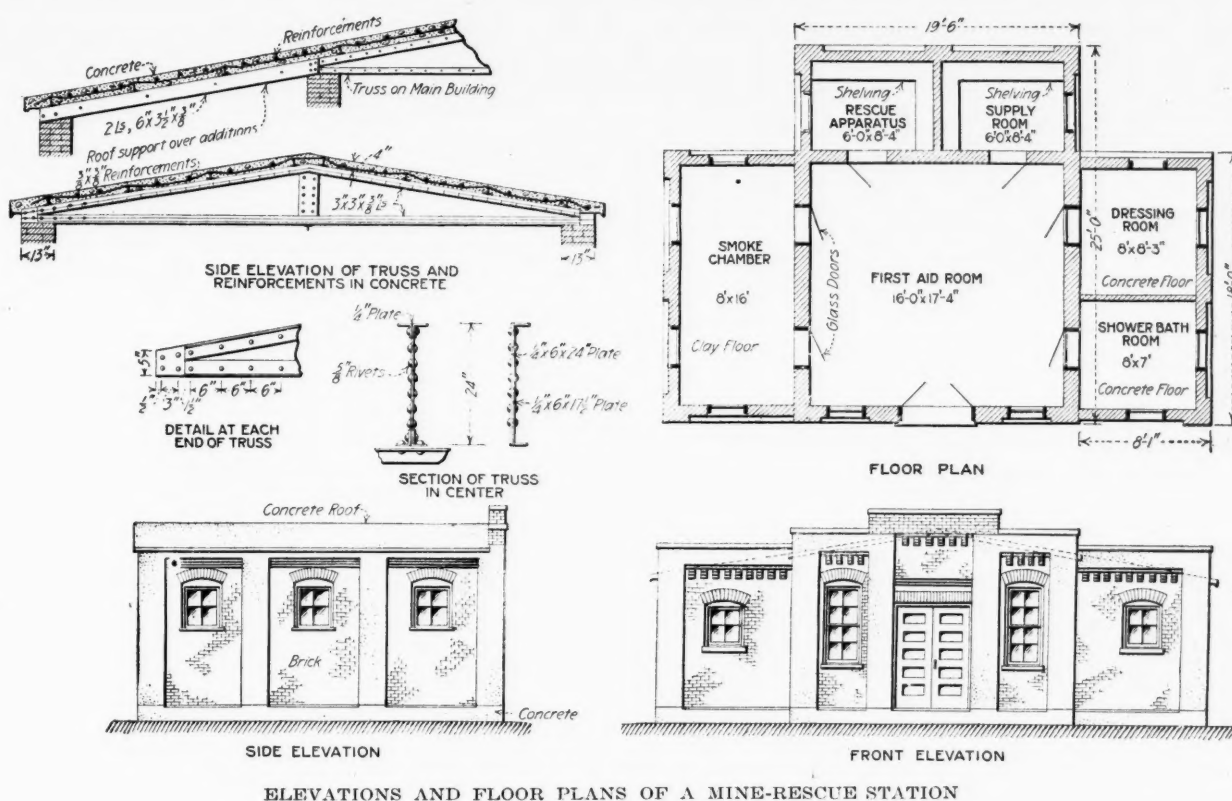
Equipment and Organization of Mine Rescue Stations*

By A. J. MOORSHEAD

President and General Manager, Madison Coal Corporation,
Chicago, Illinois

THERE is no other single branch of mining, particularly the mining of coal, that to my mind is so important as a thorough organization and equipment for mine rescue work; and there is nothing I know of that will bring greater economic benefits to mining companies than well-equipped rescue stations and well-equipped rescue organizations, because it means that the companies that contrive to secure thoroughly well-organized mine rescue bodies will seek to do everything in a safe manner, and in so doing will lower accidents to a minimum, lessen suffering

We all know that a fire which may be quickly put out if attacked within the first 10 or 15 min. of its starting means destruction of the property entirely if not controlled in less than 20 or 30 min. Experience extending over many years has taught me that there is no single thing that will bring greater relief to mining companies, and more particularly to the supervising officers of the mines, than a well-equipped rescue station at each plant, together with thoroughly trained rescue crews. At all the plants of the Madison Coal Corporation are rescue stations of the same design,



ELEVATIONS AND FLOOR PLANS OF A MINE-RESCUE STATION

and, in a large measure, stop the great expense attached to accidents to employees and damage to property, which it can safely be said is a consummation devoutly to be wished.

There cannot be a mine fire underground without more or less property being destroyed, and the mines that are fitted with breathing apparatus and well-drilled crews will put out a fire quickly where it will be impossible for men to work without such apparatus; consequently, fires may be controlled before much damage is done, and this I can testify to from experience, not only in putting out fires at our own property, but often those of our neighbors. Of course, our neighbors suffer more than we do, because they cannot be reached as quickly as necessary to obtain the best results.

*Paper read at the Sixth Annual National Safety Congress, which was held in New York City on Sept. 13.

built for the purpose and planned to comfortably accommodate the crews and care, in the best manner possible, for the injured.

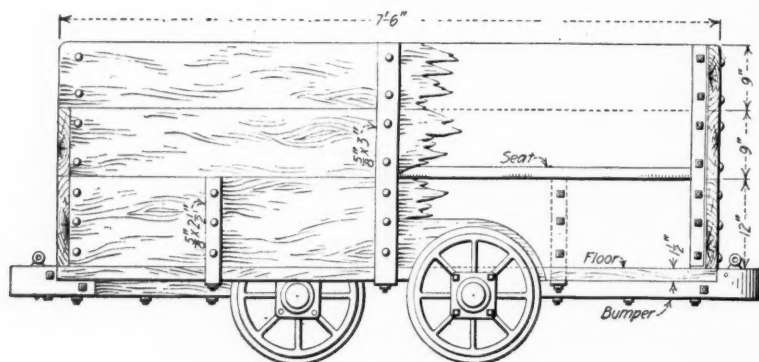
The prevention of accidents is one of the most important duties not only of myself, but of all our supervising officers at the plants; and this, together with the reasonably efficient fire-fighting organization and rescue crews, has been the means of giving us an excellent record, both in the matter of injuries and loss of life as well as in expenditures connected therewith; and I hope I may be pardoned for saying that although we have tried a large number of personal injury suits in the last 15 years we have not lost one. Our low cost of carrying our own insurance during that period, and which amounts to less than 1 per cent. of the roll, testifies clearly that we have not made settlements for the sake of keeping out of court.

I wish to divert from the subject for a moment to say that greater efficiency in preventing injury and saving life can be more generally depended upon, in my opinion, when companies carry their own insurance, because then they realize that they must pay the bill themselves for any thoughtlessness and carelessness in their mining operations.

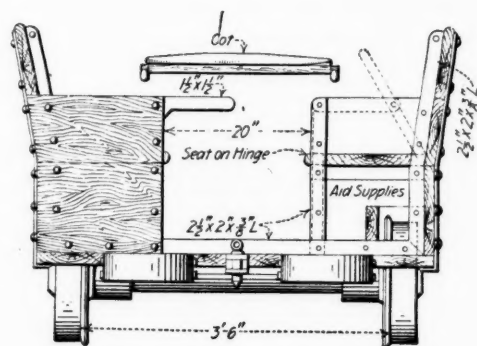
All employers who desire to do all they can to lessen injuries and loss of life will be spurred to greater activity when they realize that every serious injury, or numbers of small injuries, as well as loss of life, will make a perpetual and expensive record in the books of the company. It is sadly true that too many people will not think of the welfare of others, and sometimes not of themselves, until they pay the bills; and that is why I am an advocate of the companies carrying their own insurance. I believe it makes for safety in all that the word implies.

EQUIPMENT NECESSARY FOR RESCUE WORK

For practical and active rescue work, including the fighting of mine fires, the following equipment should be provided:



SIDE ELEVATION



END ELEVATION

PLAN OF A FIRST-AID CAR FOR USE IN THE MINES

Six sets of two-hour-type breathing apparatus complete, one set to be kept for reserve purposes, or repairs to the other five sets.

Six extra oxygen cylinders for the breathing apparatus.

Two single 6-cu.ft. capacity oxygen cylinders; these are to be carried as emergency cylinders by the rescue team; that is, if the oxygen cylinder of any of the men should give out through leakage, the emergency cylinder could be applied and in this manner the wearer would get back to the fresh air.

One "Salvator" half-hour apparatus, to be carried by the team especially when exploring districts where men are thought to be alive. If the roadway between the pit bottom and the men who survive the explosion is found to contain an atmosphere dangerous to life, the apparatus is put on the men and the breathing bag is kept full by one member of the squad. In this manner the victim can be brought safely through the foul atmosphere; if the victim is unable to walk, he is carried on the stretcher with the oxygen cylinder by his side. The oxygen cylinder of the "Salvator" apparatus can also be used as an emergency cylinder in any case where a rescue man's oxygen is not sufficient to carry him back to the fresh-air base.

One oxygen pump for the recharging of the small cylinders from the large storage cylinders.

Six oxygen storage cylinders, at least 100-cu.ft. capacity.

One complete set of wrenches, also extra set of piston leathers, gaskets, glycerine for the lubrication of pump and distilled water for the charging of the pump cylinder.

Four hundred cubic feet of oxygen should be kept on hand at least.

One hundred and sixty pounds of 99 per cent. pure caustic soda to be used for actual rescue work or fire fighting.

Two hundred pounds of crude caustic soda for training purposes.

One oxygen-reviving apparatus, with three extra oxygen cylinders for same; for this purpose the automatic pressure and suction part of the Pulmotor is not recommended, but the inhalation device of the Pulmotor in conjunction with the performing of artificial respiration is sufficient.

Three pairs flexible rubber gloves for handling caustic soda.

Six reliable electric hand lamps of the accumulator type capable of giving at least 4 hours' light per charge.

Six extra accumulators for same.

Six "Eveready" flashlight lamps of from four- to six-volt batteries, with at least two extra batteries for each and one lamp bulb for each.

Six pairs of rubber smoke goggles.

Six oil-burning safety lamps complete; at least 1 gal. of oil should be kept on hand for same, also a supply of lamp wicks.

Six extra lamp glasses for the safety lamps and a good supply of asbestos gaskets should also be kept on hand.

Two small birds should be kept by some member of the rescue team for the testing of the atmosphere in affected areas.

Four glass-stoppered bottles, about 3-oz. capacity, should be provided for securing samples of mine atmosphere for analysis.

One meter for testing the volume of oxygen passing through the reducing valves on the breathing apparatus.

One box of crayon chalk.

Ten pounds of lump sulphur for making fumes in the smoke chamber.

Six 50-ft. lengths of cotton rope about $\frac{1}{8}$ in. in diameter with snaps at each end so that all may be fastened together

if necessary. These are to be used when rescue men are working in smoke. As the men travel along, the rope is paid out and acts as a guide line when the men return, cutting out the chance of getting lost in the smoke and exhausting their oxygen before the return to fresh air.

CARE OF RESCUE EQUIPMENT

All rubber parts should be kept in a cool, well-ventilated room, lighted by a north window only; this does away with any possible chance of the hot sun playing on the rubber parts and drying them up. In the winter it is preferred that no steam heat be kept in the apparatus room; cold will do them no harm.

By attention to the heat of the room in which the apparatus is kept, the rubber breathing bags have been kept serviceable for five or six years, although the average life of rubber breathing bags is, I believe, said by the Bureau of Mines to be less than 12 months.

All rubber parts not in actual use should be washed in soap and water at about 150 deg. F. at least once every month; this will prevent hardening and cracking.

After use, the caustic soda should be emptied out of the bag at once and the bag washed out and hung up to drain, but in the event of the men having to travel a long distance from the place where the actual work was done and the caustic soda should dry and cake in the bag, no attempt should be made to break the soda while in the bag, because if this is done a torn bag will surely result.

The bag should be filled with water at about 150 deg. F. and allowed to stand until all the caustic has dissolved, and then washed in the usual way.

Mouthpieces should be washed with soap and hot water and then disinfected with diluted carbolic acid or some other disinfectant; the inhaling and exhaling valves should be cleaned with water and allowed to drain to prevent the sticking of the valves through the collection of saliva.

The bags should be fully charged with caustic soda and oxygen at all times. For experiment at the Madison Coal Corporation Mine No. 8 station, one machine has been kept fully charged with soda and oxygen for six months; at the end of this period two hours' work was performed with the same apparatus in sulphur fumes in the smoke chamber of the rescue station.

When the apparatus is kept fully charged more time is left for the thorough testing of same and parts are not liable to be mislaid.

All safety lamps should be carefully assembled, making sure that all gauzes are in and that the asbestos gaskets are in good condition.

All electric lamps should be kept fully charged.

The extra batteries for the flashlights should be renewed immediately the maker's guarantee date is reached, and which is usually about six months.

All the equipment should be in charge of one competent and responsible person, who should have authority over same at all times.

The first-aid supplies should consist of at least two large first-aid boxes; three stretchers; three blankets; three air pillows; two dozen jars of moist picric acid gauze for the treatment of burns; three full sets of splints for the treatment of fractures; one gallon of tincture of arnica for the treatment of bruises; a good supply of bandages and one set of charts for instruction purposes.

ORGANIZING THE RESCUE TEAMS

For a mine employing from 300 to 400 men at least three full teams of five men each should be organized. These teams should be composed of all the underground officials and men of sober habits who are studying mining and who are likely to stay with the company.

A fourth team should be made up of topmen and mine examiners, and would include the carpenter, electrician, blacksmith and two mine examiners. Three or four good laborers should also be trained as reserve men to fill vacancies in any of the teams from any cause. The training of these men should extend over about 12 weeks, one lesson being given each week. This should consist of work with the breathing apparatus in the smoke chamber filled with sulphur or formaldehyde fumes and the recharging, cleaning, assembling and principles of the use and testing of artificial breathing apparatus.

The first three lessons in the smoke room should not be of more than one hour's duration, but after that the practice time in the smoke room should be increased by half hours until a two-hour period is reached.

For a full drill course the men must test all joints, unions, gages, amount of soda in bag, all valves, including inhaling and exhaling valves, relief valves, reducing valves, emergency valves and main valve. The three valves last mentioned are best tested by immersion in water, or they may be tested by putting a lighted taper to the joint. If there is any leakage, the light will burn much brighter.

After putting on the apparatus, the men should be given a work-out in the sulphur fumes as follows:

Pull 50-lb. weight 120 times; travel over overcast 14 times; go through tunnel 17 x 19 in. six times; saw four props; carry 200 bricks from one end of the smoke room to the other end and build a stopping with same; set four props and take out again; put up brattice cloth once; apply emergency cylinder once.

The men should be taught to shut off the flexible tube which delivers oxygen to the breathing bag, by clamping with the finger and thumb the neck end of the bag where the oxygen comes in. In this way any leakage in or out of the bag will be prevented. The

apparatus men will, of course, replace the regular supply by oxygen from the tube fitted to the emergency cylinder. The oxygen out of that cylinder will enable him to get out to fresh air. The purpose of this training is to show the apparatus man what to do and how to do it whenever in actual rescue work he may find that the oxygen has leaked out and that there is not sufficient in the regular cylinders to continue operations.

In the latter case, being unable to use the regulating valve, he must work intermittently; that is, he must fill his bag by opening the main valve and then closing it again until more oxygen is needed.

IMPORTANT MATTERS TO BE STUDIED BY RESCUE CREW

Every member of a rescue crew should be taught the composition of mine gases and their effect upon human life; the symptoms of the different gas poisonings and how they should be treated; the proper way in which to collect samples of gases for analysis; how to test for different gases with the safety lamps, birds, etc. The members should also know how to treat rescue men who may become distressed from any cause, such as the accidental cutting off of their oxygen supply.

In addition should be taught the study of maps; methods of exploring mines after explosions; tracing the origin of the explosion; keeping notes on the condition of the roadways, stoppings, doors; the direction on which the timbers are blown out; the signs of force on pit cars; signs of heat on timbers and burnt paper; the position of the dead; whether death occurred from burns, violence or the inhalation of poisonous gases; the tallying of dead bodies and marking on the map the positions in which they were found; how those found after the explosion should be brought through gaseous zones by the use of the "Salvator" half-hour apparatus; the disinfecting of the dead bodies and the places where found; the use of the "hygrometer" in determining the amount of moisture in the air; the charging and using of fire extinguishers; first-aid treatment of burns, wounds, fractures, etc.; how to perform artificial respiration.

NECESSARY UNDERGROUND EQUIPMENT

A good system of teaching the theoretical work would be for the instructor to typewrite his lecture for each lesson and append questions, giving each member a copy and requiring him to answer the questions orally at the succeeding lesson.

The oral system of training is not sufficient. Too often the men remember very little of the lecture because they do not thoroughly understand what was said at the time; but if it is given in writing, they can study it when away from the rescue station.

Rescue cars should be provided and kept in a suitable place at the bottom of the shaft, and these should be equipped with fire extinguishers, first-aid box complete, all sizes of splints, sledge hammer, saw, wire clippers, brattice cloth, nails, stretcher, rubber gloves, and seats for six men.

The car is designed for the transportation of tools and injured men, the stretcher being arranged so that it may be attached to the four corners of the car by hooks and springs, making it very comfortable for the person on the stretcher. It is also used for conveying rescue men to the base of operations.

It is, of course, understood that the car is only used after the main roadway has been inspected by the rescue men and found clear of afterdamp, and has been cleared of any falls.

When an explosion has occurred, each member of the rescue party will immediately proceed to the mine rescue station, where they must be given written instructions by the mine superintendent of the work to be done and the route to be taken. A copy of these instructions must be kept by some responsible party so that in the event of the exploring party not returning within a reasonable time a reference to the book in which the intentions of the exploring party have been recorded would enable the searching party to follow without delay.

Each machine should be tested to see that it contains the maximum amount of oxygen (120 atmospheres) in the cylinders and a full charge of caustic soda (4 lb.); all joints, valves, etc., should be tested as already explained, the pressure of each apparatus being recorded by the captain, and a further reading of the gage made every 15 min. and recorded in his notebook. In this manner any leakage of oxygen will be detected quickly.

Before leaving the rescue station, every member should enter and work in the smoke room (which is filled with sulphur fumes) for 5 min. All safety lamps should be tested before entering the cage and the names of the rescue party should be taken by the person in charge of the shaft gates and recorded.

The exploring team should be equipped with one "Salvator" apparatus; one spare emergency cylinder; two safety lamps; at least four electric lamps; chalk;

a 50-ft. length of rope each; a flask of brandy or some other stimulant, and one bird in a cage.

The team should examine the stables immediately for signs of fire and rescue all who may be alive at the shaft bottom; test the atmosphere with the bird and safety lamp and return to the surface and report. They will then descend again and, assuming the air to be fit to breathe, travel along the main roadway carrying the bird cage on the level with the face to test for carbon monoxide and the safety lamp low down to test for heavy gases such as carbon dioxide; as soon as any signs of these gases are found they will immediately put on their mouthpieces, read their gages, travel a distance ahead, after which they will come back and make their report. A fresh-air base will then be made with a telephone fitted so that persons on the surface may know how the work is proceeding.

First-aid squads will then collect at this base with stretchers, and another squad of men will be put to work repairing brattices and doors, while another squad will carry material and supplies.

When a very considerable distance is to be traveled by the rescue party and work done such as putting up a brattice, etc., at least 20 atmospheres of oxygen should be kept in reserve; that is, supposing the distance traveled should require the using up of 30 atmospheres of oxygen, we know that it will require the same amount to come back, assuming the ground to be level. The crew should only be allowed to work until the lowest gage shows 50 atmospheres of oxygen; this will be a signal for the retreat of the party.

Play Safe!

By RUFUS T. STROHM

The quest for coal is the kind of work
That takes its toll from the toilers' lives,
For down in the earth grave perils lurk,
And up on the surface danger thrives;
But half the troubles that now and then
Bring grief and suffering, pain and woe,
Might be avoided, if only men
Would cease to guess and be sure they know.

The mining man may secure fair proof
About the state of his working place
If he'll but trouble to sound the roof.
To test the ribs and to rap the face;
But some, accustomed to look askance
At safety's methods as far too slow,
Risk life and limb on a doubtful chance,
Content to guess when they ought to know.



Taking French Leave



Sound the Roof

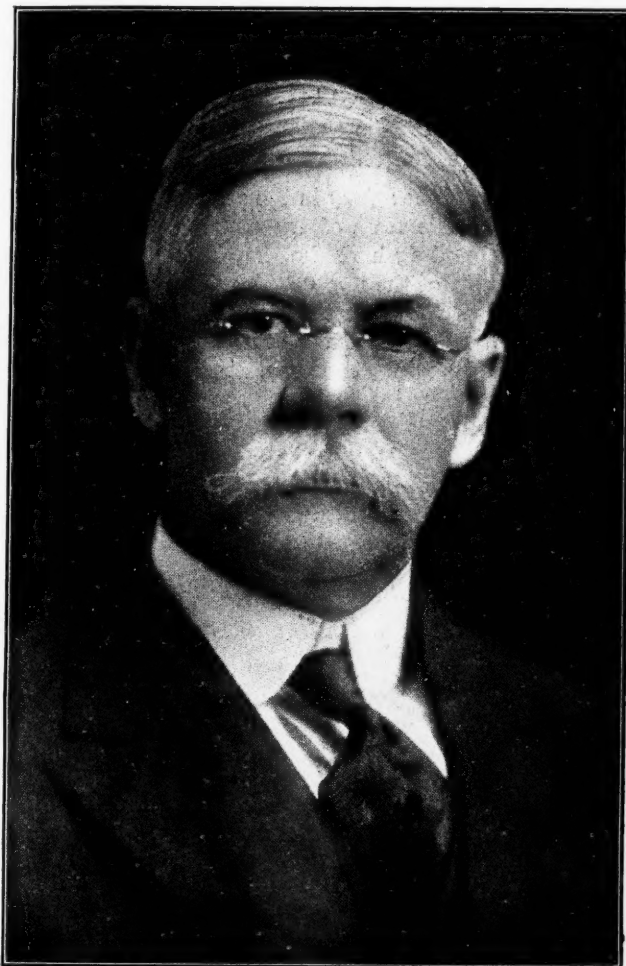
It's true enough, you may trust to fate
And not get caught if your luck is fair,
But luck is fickle, and soon or late
She'll take French leave of you unaware;
So, if you want to escape the traps
That spread above and that yawn below,
Avoid the ways of the reckless chaps—
Don't guess at things, but be sure you know.

To do your work in a prudent way
May take more time than it did before,
But here's a truth that you can't gainsay—
It's better far to be safe than sore.
Unthinking haste is the artifice
Of brainless fools who would make a show;
So toil with care and remember this:
The foolish guess, but the wise ones know.

Herbert E. Goodman

Herbert E. Goodman, vice president and general manager of the Goodman Manufacturing Co., died in Chicago, Oct. 3, at the age of 55 years. Mr. Goodman not only founded and built up a large manufacturing business, but was so closely identified with the development of the use of electricity in coal cutting and mine haulage from its earliest experimental days that his name and personality are impressed upon its whole history.

He was born in Chicago on the site now occupied by the main post office building in the heart of the city.



HERBERT E. GOODMAN

He was educated in the city schools and the old Chicago University.

His connection with the mining industry began in the year 1888, when he entered the position of secretary in the newly incorporated Sperry Electric Mining Machine Co., formed to manufacture the electric pick machine designed by Elmer A. Sperry, then a young electrical engineer and now known widely as the inventor of the gyroscopic compass by which navigation has been made independent of the earth's magnetism. With the financial assistance of A. L. Sweet, general manager of the Chicago, Wilmington & Vermillion Coal Co., operating in northern Illinois, the new company and its new machine encountered the usual vicissitudes of a new industry and a new product.

Early in 1893 the Thompson-Houston interests absorbed the Sperry Electric Mining Machine Co. and Mr. Sperry became associated with those interests. Mr. Goodman with his other associates, organized the Independent Electric Co. and purchased the patents and equipment of the Lechner Mining Machine Co., of Columbus, Ohio. Active work proceeded in the development of the chain type of coal cutting machine, to which the Lechner company had devoted two or three years of effort and considerable money without economic success.

Construction work was done in rented space at the factory of the Link-Belt Machinery Co., at Chicago. The "Independent" chain machine won its way slowly, until in the fall of 1894 there were a dozen or so in operation, together with several locomotives, dynamos and switchboards, all built by this company. In January of 1895 the company secured a large order for a complete mining plant, but was not in position to finance it. The Link-Belt Machinery Co., however, in consideration of a division of profits, established what was known as its Electrical Department for handling the mining machinery business of the Independent Electric Co. Of this department Mr. Goodman was made manager, continuing as such when later the Link-Belt Machinery Co. took over the entire business by purchase of the Independent interests.

The business was rapidly developed and became firmly established under the aggressive management of Mr. Goodman, with the substantial support of the Link-Belt company and the able assistance of old and new associates in the work. The mining machinery business was, however, a side issue in the regular Link-Belt field of elevating and conveying equipment, so when in January of 1900 Mr. Goodman proposed forming a separate company and taking over the mining machinery department, the Link-Belt Machinery Co. was wholly willing, and aided by most favorable terms and personal assistance.

Thus in April of 1900 the business was taken over by the newly formed Goodman Manufacturing Co., for which Mr. Goodman had enlisted F. S. Washburn, of Nashville, Tenn., as president, and to which he took with him many of his long-time associates, some of whom had been with him from his earliest connection with the experiences already related.

In every important detail of the advancement in the industry and of the growth of his company Mr. Goodman has had an interested and personal part. His personality has always been an inspiration in every project, both within and without his own company.

Salaries of Mine Officials

The following was received too late for insertion in the last issue of *Coal Age*, page 594, owing to the recent appointment of Robert Boyd, Jr., as state mine inspector of Arkansas, who was unable to secure the desired information earlier:

ARKANSAS—State mine inspector, \$2000 per annum; mine superintendents, \$125-\$200 per month; mine foremen, \$100-\$150 per month; assistant mine foremen, \$90-\$100 per month; firebosses, \$4.15 per day; shotlighters, \$4-\$6 per day; hoisting engineers, \$96-\$110 per month; trackmen, timbermen and other inside labor, \$3.60 per day, except trappers, who receive \$1.90 per day. Head machinist, \$4.21 per day; machinists, \$3.80 per day; blacksmiths, \$4.11 per day; second blacksmiths, \$3.80 per day; blacksmiths' helpers, \$3.35 per day; mine carpenters, \$3.42 per day; all other outside labor, \$2.96 per day.

Practical First-Aid Suggestions

By ALEXANDER OGILVIE

Lehigh, Oklahoma

MANY lives which are lost could be saved if more people understood the full value of first-aid work and how to apply it; especially so in artificial respiration and the arrest of bleeding. Resuscitation and the arrest of bleeding have been made a special study by the first-aid teams of the Folsom Morris Coal Mining Co., Lehigh, Okla. These teams were organized four years ago under the personal supervision of D. C. McAlpine, the superintendent of the mines. Valuable service has been rendered by the first-aid teams to the injured, and in some instances lives were actually saved.

In one case a cager came in contact with the cable wires, and his hand and arm caught fire and resulted in the burning off of one index finger. Luckily Thomas Gold, another of the first-aid workers, was standing by. He picked up a prop and knocked the victim off the cable. To all appearances life seemed extinct; the victim's face was horribly distorted and discolored, the eyes protruded, the tongue was swollen and the limbs were practically stiff.

Being well-trained men, and having been taught never to abandon hope till assured life was extinct, we turned him on his back, and after securing his tongue in order to keep him from swallowing it, we started the Sylvester method of resuscitation with the additional movement of working with the hands on the lower point of the ribs and pressing up toward the lungs, also rubbing the limbs from the extremity upward. In this way we finally restored circulation.

I have been fortunate in being instrumental in saving a life by understanding the application of pressure on arterial bleeding, and by so doing I have been fully compensated for the many hours I have spent in practicing first aid. Everyone should know how to arrest a hemorrhage, as many lives can be saved if one only knows how and where to apply pressure.

PERHAPS I should say a little on how to arrest bleeding, as the cutting of an artery is the most common of all accidents in coal mines, resulting from wounds caused by falling slate or coal. A wounded artery may be distinguished from a wounded vein, when both are of a large size, by the manner in which the blood flows and its appearance.

From a wounded artery the blood will issue in jets or spurts corresponding to the strokes of the heart, while from the vein it will flow in a steady stream. The blood from an artery is of a brighter and more scarlet hue than that from a vein, from which it is more darker or more purplish in color.

Another point it is important to notice is that blood escapes from both sides of a wounded vein, but more particularly from the end nearer the extremity of the body—the end farther the heart—while from a wounded artery the blood escapes only from the side nearer the heart. The reason for this is that the blood in an artery flows from the center of the body to the extremities, while it is returned in the veins from the extremities to the heart.

To arrest capillary bleeding, elevate the wounded part and apply cold water to the wound. If this is not sufficient, fold a piece of lint into a small pad, just enough to cover the wound, and exert firm pressure upon it for a while. The pad may then be secured by a bandage.

To arrest bleeding from a vein, follow the foregoing rule; but wherever the bleeding is considerable, apply pressure without delay.

To arrest arterial bleeding one must have a knowledge of the location of the artery affected, and where to apply pressure. This must be done immediately, for if the larger artery is severed blood will escape so rapidly that the bleeding will be sufficient to cause death in a few minutes if uncontrolled.

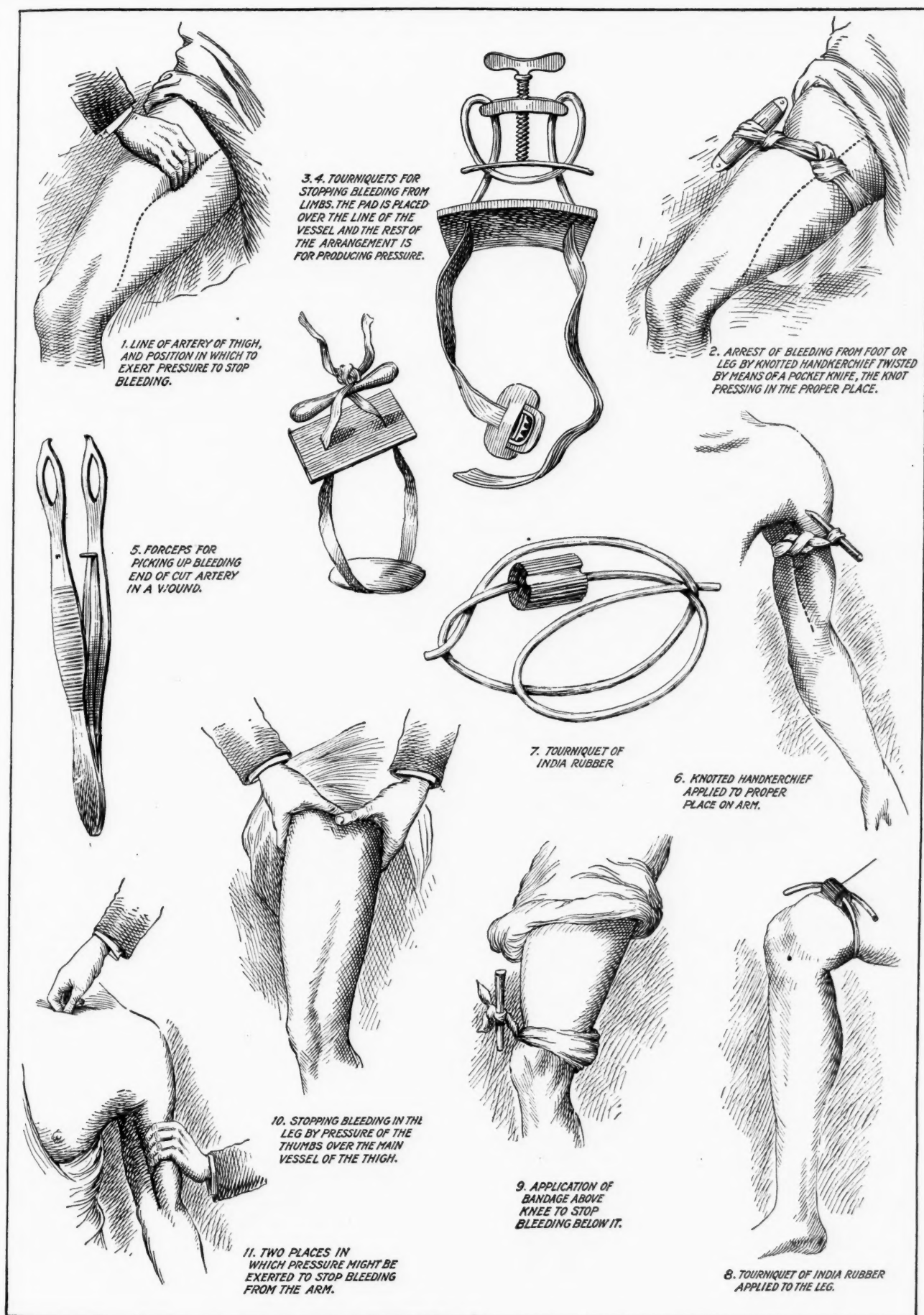
THE course of the artery in the arm is directly in line with the inside seam of the coat sleeve, and to arrest arterial bleeding here the thumb should be placed on the inner side of the upper arm, midway between the armpit and the elbow, on the line indicated in Fig. 2. If pressure is exerted from within outward, the artery will be pressed against the bone. The beating will be readily felt, and by increasing the pressure the artery can be closed. This stops entirely any bleeding in the forearm and hand so long as the pressure is maintained.

To arrest arterial bleeding from the hand it may not be necessary to compress the main artery of the arm. Make a firm pad with a pocket handkerchief in which a small smooth stone is wrapped; let this be placed in the palm, and have the patient close his hand tightly over it; then secure the hand in this position by means of a bandage. Bleeding from the hand may also be stopped by the pressure of a pad across the front of the wrist, to close both arteries.

The course of the main artery of the leg is shown in Fig. 4. To arrest bleeding from the leg, place your fingers on the line indicated and press firmly against the bone of the upper leg. Pressure exerted here will close the artery and so arrest the bleeding lower down. It would be difficult to maintain efficient pressure for any length of time, so the use of a pad of some kind is necessary. Fig. 2 shows the application of a knotted cravat twisted up by means of a knife to accomplish the end desired.

To arrest bleeding from the head and neck, keep the head high, employ cold water and apply firm pressure directly over the wound. If any of the arteries in the face are wounded, place a piece of clean lint over your thumbs and apply firm pressure directly over the wound, pressing firmly against the bone. In this manner bleeding can be stopped.

To arrest bleeding from the nose, let the patient sit erect. Bending his head back, place cold water cloths over the patient's nose. If this is not sufficient, let the nostrils be held firmly for a little, or let cold water be injected with a syringe very gently up the nostrils. A key or a cloth wrung out in cold water and placed at the nape of the neck often proves efficacious, or the nostril may be plugged gently with a piece of lint.



ILLUSTRATING A NUMBER OF PRACTICAL WAYS IN WHICH BLEEDING IN DIFFERENT PARTS OF THE BODY MAY BE ARRESTED

Charging Racks for Miners' Lamp Batteries

SYNOPSIS—*Rapid increase in the use of portable electric lamps in mines necessitated a design of charging rack that would recharge any number of lamp batteries and permit them to be placed in their proper places in the rack, as returned by the miners. The unit system of design permits of indefinite expansion, as required by the development of the mine. Interruption of current announced by signal gong and reversal of current prevented by automatic device.*

AMONG the many changes for the better, the safety-first movement has brought about a wonderfully increased use of miners' electric lamps. The portable electric lamp, by affording a far superior light to other lamps, has increased the miner's efficiency, making possible a greater daily output of coal per capita and at the same time decreasing the liability to accident from falls of roof and coal at the working face and throughout the mine.

Several of these types of electric lamps have already been approved by the Federal Bureau of Mines, and their use has increased so rapidly and to such an extent as to

require improved means of recharging the storage batteries with which portable lamps are equipped.

The new charging rack designed by the Cutler-Hammer Manufacturing Co., Milwaukee, Wis., is built upon the unit system, which has proved so successful in the charging equipment for electric cars and locomotives. The unit system of charging racks for miners' lamps corresponds to the sectional bookcase idea, and is particularly adapted to the purpose intended, because it permits of indefinite expansion as more lamps are required in the development of a mine. Each charging rack is equipped with hooks by which it is hung on brackets clamped on vertical 1½-in. iron-pipe supports. Two of these brackets are furnished with each rack to give it the required stability. The unit system permits of starting an installation with a small equipment, which can be expanded as the requirements demand.

A general view showing an installation of a number of these charging racks appears in Fig. 1. On the right of the figure are shown the rheostat panels, which are designed to control the current in each circuit supplying the corresponding horizontal line of racks. Above the rheostat panels is shown a meter panel, which is equipped with a magnetic switch and relay. This panel is provided with a Weston, Model 269, ammeter.

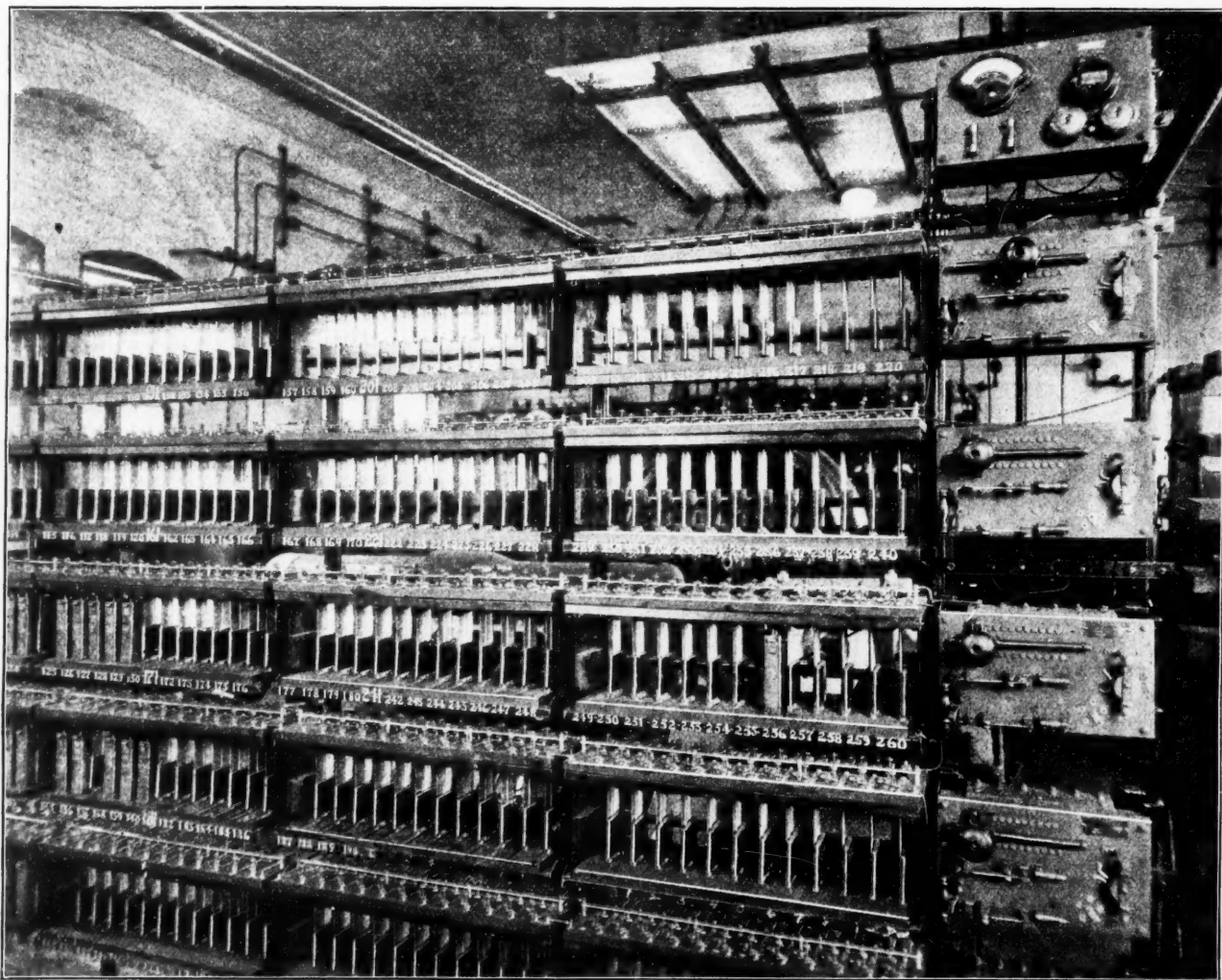


FIG. 1. SHOWING A PORTION OF INSTALLATION OF CHARGING RACKS FOR HOLDING 250 BATTERIES

The rheostat panel, Fig. 2, has a sliding arm for adjusting the charging rate at any desired value, as explained later. Each panel also carries a double-pole knife switch, having a special arrangement of clips so designed that when the switch is partially closed the ammeter on the meter panel is thrown into the circuit;

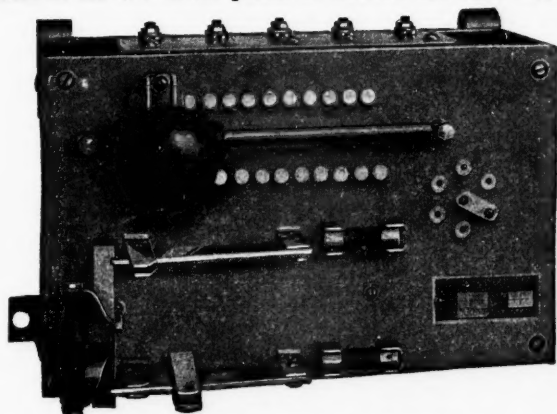


FIG. 2. THE RHEOSTAT PANEL

but when completely closed the ammeter is disconnected, the circuit then traversing the corresponding set of charging racks.

The meter panel shown in Fig. 3 contains the ammeter for measuring the strength of the current and regulating it to suit the number of racks installed in the set, the kind of batteries to be charged and the voltage of the charging current. On this panel are shown, also, the magnetic switch and compound relay providing automatically against reversal of the current following a possible interruption of the circuit.

The design of these panels is wholly automatic. For example, should there be any accidental interruption of the current, there would result at once a reverse current from the partially charged batteries. This is prevented, however, by the action of the magnetic switch and compound relay, which open the circuit when the current is broken, and close it again when the voltage is restored. An interruption of the current is also immediately announced by the signal bell shown on each rheostat panel in Fig. 1.

The number of charging racks in a set controlled by one rheostat is governed by the voltage of the charging current. For Edison batteries a minimum of 40 volts

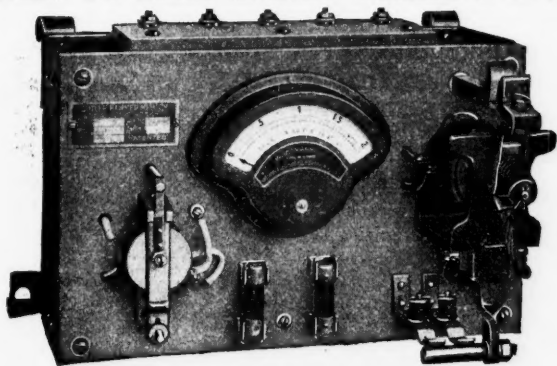


FIG. 3. THE METER PANEL

is required for each rack of ten batteries. In that case, when using a 250-volt circuit, it would be possible to install six racks in a set, provided the current will not fall below 240 volts at any time. It is advisable, how-

ever, to install five racks on a 250-volt circuit, which will permit the pressure to fall to 200 volts without interrupting the charging of the batteries.

In the case of lead batteries, each rack of ten batteries will require 28 volts, and it is possible then to install seven racks requiring a minimum voltage of 196; or eight racks can be installed if the pressure will not fall below 224 volts. A good plan, when using a 250-ft. circuit, is to arrange for an installation of five sets with five racks in each set, which will provide for 250 lamps. In this case there would be five circuits on each frame. If desired, racks can be mounted on each side of the frame, which would give a capacity for charging 500 batteries on a single frame at one time.

When the batteries are handled on the checking system, generally used for checking the men in and out of the mine, this arrangement makes it easy to locate any battery by its number, since there are 50 batteries in each set, or row, and similar numbers in each hundred will fall in the same vertical line.

In Fig. 4 is shown a single charging rack, which consists of a substantial steel frame carrying two slate slabs—one below on which the batteries are placed for charging and the other above supporting the contact parts. When a battery is to be charged, it is placed in the rack edgewise, like a book in a bookcase, which

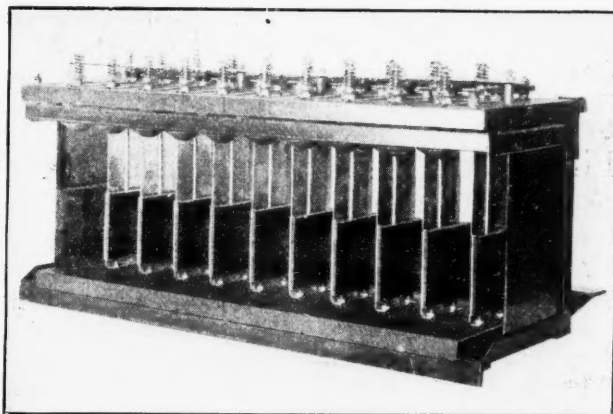


FIG. 4. SINGLE CHARGING RACK FOR TEN BATTERIES

gives greater compactness. Each battery has its own compartment and these are separated by a partition that prevents the batteries from touching each other and thus making a contact.

The design of the rack is such that a battery cannot be placed in it with the polarity reversed. As observed in the figure, the contact parts supported by the upper slab are shaped like an inverted mushroom. These are pressed into contact with the battery by strong coil springs, which appear above the slab. All contact parts, except the mushroom contacts, are mounted on top of the slab where they are out of the way of any discharge from the battery vents.

The circuit through each set of racks is laid out so that the batteries are charged in series, but provision for the absence of any battery is made by means of interpolating resistances, which take the place of any battery that has not as yet been placed in the rack or that it may be desired to remove. In other words, any number of batteries can be taken from the rack without appreciably affecting the charging current. This

makes it possible to charge, at will, any number of batteries up to the full capacity of the rack, without the necessity of adjusting the rheostat. The contacts are all interchangeable and it is a simple matter to remove the mushroom contacts for inspection or cleaning, should this be necessary.

There is, of course, some slight loss in efficiency when fewer than the maximum number of batteries are charged on a circuit; but the charging current is so small that this loss is negligible. Also, it may be observed that, with fewer cells on a circuit, wider fluctuation of line voltage can occur without causing trouble.

Equally spaced contact plates are located on the front of the frame and connected to the contacts for the battery terminals. The use of a low-reading voltmeter, suitably mounted and provided with contact studs spaced the same distance apart as the contact plates on the frame, makes it possible to read the voltage across any battery in the rack while it is being charged and without interfering with the charging circuit.

To regulate the current for any given installation, the batteries are placed in the rack and the knife switch on the corresponding rheostat panel is partially closed, so that the circuit passes through the ammeter on the meter panel. The current is then regulated as desired, by moving the sliding portion from point to point, until the desired value is obtained and then closing the knife switch completely, which cuts out the ammeter. The ammeter readings for any circuit can be taken during the charging, by partially opening the knife switch, thus putting the ammeter in circuit.

Fifth Somerset County First-Aid Meet

BY GEORGE B. LANDIS

Camp Educational Secretary, Camp Hancock, Augusta, Georgia

After a rainy night, the murky forning gradually cleared into a comfortable day for the Fifth Somerset County Miners' First-Aid Meet on Saturday, Sept. 1, 1917, at Sipe's Race Track on the Lincoln Highway, near Jenners, Penn. The 21 teams from all over the county arrived early—generally by automobile. The field was laid out with an amphitheater in front, but owing to the configuration of the ground it was necessary, contrary to custom, to place the patients' heads toward the spectators. The doctors were few.

Some were serving on exemption boards, some were already in the army ranks and one—Captain Louthier, of Somerset, who acted as judge—about to leave for active service.

The grounds were well arranged by Angus W. Louthier, superintendent for the Consolidation Coal Co. at Jenners. The fieldmen—from Bureau of Mines, State Department of Mines, associated companies and corporation welfare departments—helped in the details. The State Young Men's Christian Association of Pennsylvania, George B. Landis, industrial secretary, conducted the meet.

The one-man and two-man events were run in relays. In the former there were five ties, which after a stiff problem to be worked with but one first-aid packet, was won by Paul Turkel, Grazier Coal Mining Co., with P. M. Cole, of Boswell, second, and Ellic Pavlick, of Bell, third.

The two-man event had six ties at 100 per cent. In working a difficult problem two of these maintained a record of 100 per cent., and after a third problem W. B. Brownlee and Thomas Morley, of the Quemahoning Creek Coal Co., had two points more than the men of Jenners No. 2.

In the team problem Consolidation Coal Co., of Acosta, was first. The members of the team were: R. M. Zimmerman, captain; Earl Berkley, Harry Saylor, Harry Ogline, Joe Tims, and Willis Spangler, patient. R. A. Morgan is superintendent of the company and A. T. Morgan, foreman.

Jenners No. 2, of the Consolidation, was second. Members composing the team were: Robert Crawford, captain; Ed Millisky, John Shaulis, Chester Maust, Frank Mason and George Baird, patient. A. W. Louthier is superintendent of the company.

Third place was taken by Orendax No. 2, of the United Coal Corporation, of Boswell. The team members were: G. F. Swope, captain; John Novak, John Taylor, Herb Horner, P. M. Cole and A. Cross, patient. W. G. Palmer is superintendent of the company and Arch Roberts, foreman.

The presentation of prizes of American Red Cross medals to winners of first places and of certificates to winners of seconds and thirds was made and all the contestants entered in the meet received fobs and vest-pocket first-aid packets.



VIEWS OF THE FIFTH FIRST-AID MEET OF SOMERSET COUNTY

News From the Capitol

By Paul Wooton



[Many of the activities in the National capital are of such importance to the coal-mining industry that an increased allotment of space is being given to our Washington correspondence. The Washington Bureau of "Coal Age" is in charge of Paul Wooton, whose office is centrally located in the Metropolitan Bank Building. Complete files of "Coal Age" as well as books of reference likely to be of service to coal men may be found there. Mr. Wooton is in a position to be of material assistance to those who have business to transact with Government officials. Have your mail addressed care of Mr. Wooton while at the capital.—Editor]

New Wage Agreement

Coal miners and operators of western Pennsylvania, Ohio, Indiana and Illinois appealed, on Oct. 6, to Harry A. Garfield, Federal fuel administrator, to increase coal prices at the mine, fixed in President Wilson's orders of Aug. 21 and 23, to permit wage advances agreed upon in a conference that began at Washington Sept. 25.

Dr. Garfield took the matter under advisement and will give the decision of the fuel administration at an early date. The agreement drawn up between operators and representatives of the United Mine Workers is conditional upon the proposed price increase.

It is stipulated that the mining prices for mine-run coal, pick and machine, in the present contract be advanced 10c. per ton; that in the block coal field of Indiana the screen-coal price be advanced 12½c. per ton; that all day labor and monthly men except trappers and other boys be advanced \$1.40 per day and trappers 75c. per day, while boys now being paid more than \$1.90 per day, but less than men's wages, shall be advanced \$1 per day; and that all yardage, deadwork and room-turning be advanced 15 per cent.

Subject to approval at the next biennial convention of the United Mine Workers, representatives of that organization agree that the present contract be extended for the time of the war, but not beyond Apr. 1, 1920.

Both miners and operators agree to adhere patriotically to the present scale, as set forth in a contract running to Mar. 31, 1918, if the fuel administration refuses to take action. A memorandum to Dr. Garfield states that there is difficulty in keeping the men from emigrating to other fields, where the wage scale is higher, and that there is much unrest because of the high cost of living.

The agreement provides for more faithful observance of penalty clauses in contracts, by which stoppage of

work will mean collection of fines, and for introduction of penalty clauses where none exist.

Delegates present for the United Mine Workers were: J. P. White, national president; William Green, national secretary; F. Farrington, Illinois president; Edward Sewart, Indiana president; William Mitch, Indiana secretary; John Moore, Ohio president; G. W. Savage, Ohio secretary; P. Murray, Pittsburgh president, and Robert Gibbons, Pittsburgh vice president.

Representing the operators were: T. T. Brewster, St. Louis; E. T. Brent, Chicago; Phil Penna and M. Freeman, Terre Haute, Ind.; Mike Gallagher and S. H. Robbins, Cleveland; John H. Donaldson and Tracey Guthrie, Pittsburgh.

Coal Contracts Limited to Price Fixed by Fuel Administrator Garfield

Important rulings concerning jobbers' contracts, wagon-mine coal and confiscation of coal by railroads were issued recently by Federal Fuel Administrator Harry A. Garfield in a compilation embodying all regulations put out by the fuel administration to date in relation to coal prices, sale, shipment and distribution.

Jobbers who, at the time of the President's orders fixing the price of coal at the mine, Aug. 21 and 23, had contracted to buy coal at or below the price set in those orders may not sell at a price higher than what they pay, excepting to add the proper jobbers' commission. All contracts binding at law are to be observed; but coal bought after the President's order cannot be sold at a price above the one fixed by him, even if delivery was contracted for at an earlier date. In short, jobbers who have made contracts to sell at a high rate cannot now rush into the market, buy at the lower rate established, and sell above the maximum, thus making a greatly increased profit.

The orders prescribe that all jobbers must register with the Federal Trade Commission by Oct. 25, stating the financial interest of all stockholders and partners of jobbing concerns in mines producing coal. Another rule concerns methods of accounting by dealers, which the fuel administration wishes to reduce to a uniform basis, in order to make comparisons of cost without injustice to anyone. Uniform cost-sheets are being prepared for distribution to dealers, who are required to furnish reports monthly, or at any time these are desired by the fuel administration at Washington or state fuel administrators.

Coal confiscated by railroads for their own use may be purchased from the owner at the price under which

it was consigned when confiscated, if this is not above the figure set by the President. Exception must be made when it has been consigned under a contract that would stand in court, made before the Presidential order, in which case the railroad must pay the higher figure, if it wants the coal.

One of the most difficult problems the fuel administration has had to solve is that of who should pay the cost of hauling coal from "wagon mines," which have no rail connection, to the railroad. Thousands of these mines have started up lately, because of the high price of coal, without which they could not be operated at a profit. Loading cars from wagon mines, after the haul, is slow, which has meant the holding of cars longer than advisable at loading points.

The fuel administrator directs that the product of these mines be shipped in box-cars, when it is sent to the general market by rail, thus saving the open cars for the use of mines where the loading can be done most quickly. Where box-cars are used by wagon mines a charge of 75c. per ton, in addition to the President's prices, is permitted, to cover the cost of hauling and loading. The fuel administrator also rules that where these wagon mines make deliveries directly to consumer by wagon or truck, the cost of the haulage may be added to the President's prices.

An assignment of a contract for the sale of coal, when made after the President's order applicable to the price of the coal covered by the contract, will be treated as an actual sale of coal.

For the present, cannel and smithing coal may be sold at current market prices; but the latter may be used for smithing only.

Following are the orders, which may be obtained by persons interested upon application to the Fuel Administration. The sections new or greatly modified are Nos. 8 to 20, inclusive.

Orders, Ruling and Regulations relating to coal prices and governing the sale, shipment and distribution of coal:

Promulgated by the United States Fuel Administrator on behalf of the President under the authority of the Act of Congress, approved Aug. 10, 1917, entitled "An act to provide further for the national security and defense, by encouraging the production, conserving the supply and controlling the distribution of food products and fuel," and an executive order of the President dated Aug. 23, 1917, appointing said Fuel Administrator.

1. The prices for coal fixed by the President as modified by the orders of the Fuel Administrator shall apply to export and bunker coal.

2. Contracts relating to bituminous coal made before the President's proclamation of Aug. 21, 1917, and contracts relating to anthracite coal made before the President's proclamation of Aug. 23, 1917, shall not be affected by these proclamations, provided the contracts are bona fide in character and enforceable at law, in the absence of further express regulation.

3. If the claim is made that any specific coal has been acquired in accordance with a bona fide contract enforceable at law, existing prior to the time of the order of the President applicable thereto, the burden of proof is upon the parties to the contract to establish these facts.

4. Coal may be bought and sold at prices lower than those prescribed by the orders of the President.

5. The effect of the President's orders on coal rolling when the order affecting such coal was issued is to be decided by first ascertaining whether or not the title had passed from the operator to the consignee at the time the President's order became effective. If the title had passed to the consignee the price fixed by the President does not apply.

6. Operators who maintain their own sales department, whether in their own name or under a separate name, and dispose of coal directly to the dealer or consumer, shall not charge any jobber's commission. A jobber must be entirely

independent of the operator, in fact as well as in name, in order to be entitled to charge a jobber's commission.

7. Free coal shipped from the mines subsequent to the promulgation of the President's order fixing the price for such coal shall reach the dealer at not more than the price fixed by the President's order, plus only the prescribed jobber's commission (if the coal has been purchased through a jobber) and transportation charges.

8. A jobber who had already contracted to buy coal at the time of the President's order fixing the price of such coal, and who was at that time already under contract to sell the same, may fill his contract to sell at the price named therein.

9. A jobber who, at the time of the President's order fixing the price of the coal in question at the mine, had contracted to buy coal at or below the President's price, and at that time had no contract to sell such coal, shall not sell the same at a price higher than the purchase price, plus the proper jobber's commission as determined by the President's regulation of Aug. 23, 1917.

10. A jobber who, at the time of the President's order fixing the price of the coal in question, was under contract to deliver such coal at a price higher than a price represented by the price fixed by the President or the Fuel Administrator for such coal, plus a proper jobber's commission as determined by the President's regulation of Aug. 23, 1917, shall not fill such contract at a price in excess of the President's price, plus the proper jobber's commission, with coal purchased after the President's order became effective and not contracted for prior thereto.

11. A jobber who, at the date of the President's order fixing the price of the coal in question, held a contract for the purchase of coal without having already sold such coal, shall not sell such coal at more than the price fixed by the President or the Fuel Administrator for the sale of such coal after the date of such order, plus the jobber's commission as fixed by the President's regulation of Aug. 23, 1917.

12. Every jobber of coal or coke in the United States shall file with the Federal Trade Commission, Washington, D. C., on or before Oct. 25, 1917, a statement showing (1) his name; (2) post office address; (3) date of the establishment of his business; (4) names of stockholders, members and partners of the jobbing concern; (5) financial interests of stockholders, members and partners of the jobbing concern in any mine producing coal. Any jobbing concern which may be established after the issuance of this regulation shall immediately upon its organization file a similar statement with the Federal Trade Commission.

13. Whenever called upon to do so by the Fuel Administrator, all persons, firms and corporations dealing in and selling coal to consumers at retail shall return to the Fuel Administrator at Washington, D. C., or otherwise as directed, a sworn statement of facts showing of his, her or its retail margin, between the dates of Jan. 1, 1915, and Dec. 31, 1915, both inclusive; and to furnish such other information as may be required; such returns to be made on a blank form to be furnished by the Fuel Administrator, when so requested.

14. Where coal has been confiscated by a railroad for its own use, it may be sold to the railroad by the owner thereof at the price at which it was consigned when confiscated, but at no higher price; provided, however, that if the price at which it was consigned is above the price fixed by orders of the President and of the Fuel Administrator it shall be billed at the price so fixed, unless it is consigned in compliance with a bona fide contract enforceable at law, which was in existence when the price of such coal was fixed.

15. Coal delivered direct to the consumer from the mine, by wagon or truck (whether from wagon mines or other mines), shall be sold at not more than the prices fixed by the President and the Fuel Administrator, plus the actual cost of hauling.

16. Coal bought by a railroad for its own use as fuel from a wagon mine hauling to such railroad shall be sold at not more than the prices fixed by the President and the Fuel Administrator, plus the actual cost of hauling.

17. No charge for hauling may be made by an operator of a wagon mine, or paid by the purchaser of the coal, on coal shipped by rail, except where such shipment is made in box cars, in which case an additional charge not to exceed 75c. per ton may be made. In all other cases the price of wagon mine coal on board cars shall not exceed the price prescribed by the President and the Fuel Administrator.

18. Until further action of the Fuel Administrator, smithing coal, when used for smithing purposes only, may be sold at the market prices prevailing at the time of the sale.

19. Until further action of the Fuel Administrator, cannel coal may be sold at the market prices prevailing at the time of the sale.

20. An assignment of a contract for the sale of coal, where such assignment is made after the President's order applicable to the price of the coal covered by the contract, shall be treated as a sale of coal and be subject to all the orders and regulations of the President of the United States and the Fuel Administrator relating thereto.

21. These orders, rulings and regulations supersede all orders and regulations of general application previously issued, excepting:

1. The order of the President dated Aug. 21, 1917, fixing prices of bituminous coal modified by sundry orders of the Fuel Administrator and all such orders affecting such modifications.

2. The order of the President dated Aug. 23, 1917, defining jobbers and fixing the prices of Pennsylvania anthracite coal, the same being modified so far as it relates to the price of anthracite pea coal by the order of the Fuel Administrator dated Oct. 1, 1917.

3. Order of the Fuel Administrator, dated Oct. 1, 1917, relative to the shipment, distribution and apportionment of coal reshipped by water at Lake Erie ports.

4. Order of the Fuel Administrator, dated Oct. 1, 1917, relating to the maximum gross margins of retail coal dealers.

(Signed) H. A. GARFIELD,
United States Fuel Administrator.

Production Statistics

A decided decrease in coal production during the week ended Sept. 22 is revealed in the latest weekly report issued by the United States Geological Survey. During the week under review the production is shown to be 69.7 per cent. of the full-time capacity of the mines. This compares with 72.3 per cent., the showing of the week preceding. The decrease in Ohio was 6.6 per cent. and in Indiana 5.2 per cent. The loss of output in these states is chargeable almost entirely to unfilled car orders. The operation of the priority order and the movement of troops are held mainly responsible. Little loss of output was caused by labor shortage or from strikes, but the car shortage is shown to have cut down the production figure by 22.4 per cent. in Indiana and by 20.5 per cent. in Ohio.

As figures on coal shipments become available more quickly than do those showing the outputs of mines, the Survey is able to give returns on shipments for the week ended Sept. 29. During that week shipments increased 5.6 per cent. over the week preceding and foreshadows improved production figures which will not be available for another week. The increase was greatest in Ohio and Indiana, where the showing of the week before had been so bad.

During the week ended Sept. 22 Pennsylvania suffered severely from labor shortage. Twenty-three per cent. of full-time capacity was lost in the Irwin gas field district alone from this cause.

More State Fuel Administrators

Additional state fuel administrators have been appointed as follows:

Minnesota—Judge John F. McGee, of Minneapolis, Minn. Member of the State Safety Commission and Chairman of the State Committee on Fuel. Has been engaged in conducting an investigation on the fuel situation in Minnesota.

North Dakota—I. P. Baker, of Bismarck, N. Dak. Business man.

Louisiana—John G. O'Kelley, of New Orleans, La. Business man.

Delaware—Charles H. Ten Weeges, of Wilmington, Del. Business man.

Oregon—Fred J. Holmes, of La Grande, Ore. President of the La Grande National Bank.

Mississippi—C. L. Townes, of Minter City, Mississippi.

New York—Albert H. Wiggin, for many years president of the Chase National Bank of New York City.

President Now Studying Fuel Situation

Faced with the necessity of taking important and decisive action, Dr. Harry A. Garfield, the fuel administrator, laid the whole coal situation before the President during a lengthy conference Monday. It is believed that Dr. Garfield advised the President that he is convinced a material advance must be made in the coal-price schedule, if production is to be stimulated. It is stated that reports have been made to the President that operators are not over-anxious to keep up production at this time in the expectation that this action will tend to increase the chance of securing a higher scale of prices. That Dr. Garfield has not reached this conclusion can be stated on the best of authorities.

The President seems to have conceived the idea that Francis S. Peabody, the chairman of the Committee on Coal Production, was not justified in indorsing the first schedule of prices. Apparently he is very reluctant to recede from that position, even in the face of Dr. Garfield's conclusions. The President also has before him certain conclusions on the situation by Joseph E. Davies, of the Federal Trade Commission. No decision as to price changes or comment on the wage agreement is likely until the President has completed a study of the situation in its new aspects.

Again Hits at Fuel Administration

For the second time within ten days, Ryley Grannon, of the *Washington Post*, scores the Fuel Administration. Particular significance is attached to the daily Grannon article appearing in the *Post*. It is known that Ryley Grannon is a *nom de plume*, and it is stated on good authority that it represents the thoughts of one of the most prominent newspaper men in the capital. It is conceded that the articles set forth the editorial conclusions of the *Post*.

In introducing his latest article on the coal situation, the mysterious Mr. Grannon says:

The coal question is reaching a point where it cannot be settled by the issuance of biographical data by Dr. Harry A. Garfield and his corps of gifted literary assistants. Unless coal production is increased immediately there will be more suffering in the United States than in Germany this winter.

At another point in the article, these statements are made:

The moment the price was fixed at \$2 a ton, production began to shrink, and it has been dwindling ever since. That was on Aug. 21.

There was a special committee of the Council of National Defense to attend to the coal problem, but it has been lost in the shuffle. It agreed to \$3 a ton for coal, and Secretary Baker promptly denounced the rate as exorbitant and unreasonable.

If \$3 a ton is unreasonable and exorbitant and \$2 a ton is so low that mines are closed and the energy of the nation paralyzed, the coal question must be extremely delicate indeed.

With regard to the recent wage conference, Mr. Grannon essays the following comment:

The producers and miners have not reached any agreement whatever. The nearest they have agreed is that they will stop their quarrel if the Government will pay their demands. Apparently there is nothing else to do, for workers cannot be forced to work and operators are powerless without them.

Dr. Garfield declared that the coal output this year would exceed that of last year by 10 per cent.

(Late Washington news on p. 624)

Editorials

Safety and Cost Accounting

IN THE present somewhat demoralized condition of the coal mining industry there is one exceedingly hopeful sign. It is a long-delayed but lively—and no doubt lasting—awakening to the fact that sound and accurate cost accounting is an indispensable requisite to successful operation.

Regardless of whether the Government in its first fixing of selling prices had enough information at hand regarding cost to fix prices fairly, it must be admitted that coal operators in many quarters were unable to show clearly and fairly the true mining cost at their operations. Even where they were operating practically under the same general conditions in the same district, statements of cost were presented by various companies that were so hopelessly lacking in uniformity, both as to application of accounting principles and arrangement, as to be scarcely more than a hodge-podge of statistics rather than clean-cut, indisputable statements of cost.

None of this reflects credit on the industry. It is simply a case of swallowing a rather bitter pill. And many who take it now might easily have profited from the experience and counsel of wiser heads in the business; for more than any one else, the man or the concern whose mine cost is made up by competent accountants on sound basic principles stands ready as a rule to give every one of his competitors the advantage of his wisdom, so that he can fix his selling price correctly. The wise mine manager knows that those concerns that do not know what their real cost is, but proceed to sell their product based on what they think their cost is, are digging their own graves and getting ready to put the bill for funeral expenses up to the other fellow.

It is undisputed that the great majority of business failures is attributable to unsound accounting methods or dire ignorance. Men either do not know how themselves, or will not hire men who do know, to ascertain the true cost of doing business. The coal industry is unhappily no exception to this rule. To hire competent, trained accountants to devise and execute correct cost systems at coal mines has been too often considered unnecessary, or "dead" expense. The result is that the so-called cost-sheets of some mining companies, to men who know what should be embraced in a mine cost-sheet of the right kind, would be jokes if they were not the symbols of underlying tragedy in business.

There are three great classes—and indirectly the whole fabric of society—interested vitally in sound coal cost accounting: The public which must buy and use coal in one form or another as fuel, light, transportation, manufacture, etc.; the mine workers and their families, who must live and contribute to the nation's need from the worker's earnings in the industry and the owners and stockholders of coal mines.

There is an absolute community of interest—or should be—on the part of these three great classes.

When their mutual interest in the success of the business prompts or urges them to a correct perception of what sound mining cost means, there will surely come a renaissance of sound mine accounting. Such a cementing of opinion born of common necessity will tend to bring many benefits to the industry hitherto undreamed of. It will be the first of many such awakenings born of war and war measures. Certainly the coal industry will be able to make a better showing should it be called upon in future to produce cost statistics.

Lastly, to the thousands of new companies that have added themselves to the coal-mining industry in the last two years: Do not make your business a failure by a refusal to properly account for the cost of doing business. The time for thinking that competent auditors, accountants and mine clerks are dead weights in the operation of your business is past. The best men of this kind that you can get should be secured before you spend your money for property, equipment, initial operations, etc.

The auditor and cost accountant who understands his business from A to Z, as well as the intelligent mine clerk, whether timekeeper, storekeeper or what-not, is coming into his own; for the entire mining fraternity is rapidly coming to realize—some through a salty and bitter experience—that correct accounting reduces cost.

If you have not already been converted to this belief, go out and hire a man "who knows" and put him in charge of the accounting end of your operations. The progress of your business will soon reflect the wisdom of your choice. There can be no "safety first" around coal mines without safe cost accounting.

Sensible Economy

MUCH of the latter-day success of many of our great corporations has been due to their avoidance of waste and their utilization of byproducts to the last degree. Thus it is said that the Chicago packers use "everything but the squeal." Utilization of resources to the ultimate has also been responsible for much of the success, past and present, of the German people; not only nationally but individually is this race thrifty.

In times such as these thrift, frugality and the ability to "make a little go a long way" are quite as commendable in the individual as in the great corporation or the greater nation. As a class, we Americans have been good earners and good spenders—witness the automobiles about any mining camp. But the time has now come when it behooves us all to earn as much as ever, or if possible more; to save as much as ever, or if possible more; and invest our savings wisely. The times are decidedly abnormal and demand what might be termed abnormal measures.

Saving does not consist entirely in placing a large amount of the contents of the pay envelope in the bank

each month or fortnight. Few of us ever really wear out our clothes; we wear them until they get out of shape, or we get tired of them. Then we throw them aside and buy new ones. A half dollar or dollar spent for cleaning, pressing or repairing our last winter's suit might put it in such shape that with care we might be able to wear it throughout the winter that is now fast approaching. The same is true of that old overcoat, last year's cap, or last season's gloves.

Some of us have in the past possibly harbored the hallucination that the wearing of old clothes was the outward mark of a sloven, and was at best a sure sign that we were not prosperous. We were consequently ashamed to be seen in garments that were even slightly threadbare. It is said that in London, and England generally, new clothes are the exception. Old clothes, some of the vintage of several years ago, are in common use. These may be well worn, but cannot be considered shabby, as they are neatly cleaned and pressed at all times. The people of England are thus enabled to reduce their expenses and invest the proceeds in the securities of the United Kingdom.

In this country a wise example in the matter of saving has been set by one of the foremost financiers of the land—John D. Rockefeller, Jr., is now wearing a pair of half-soled shoes. He says that he saved \$8 by having his old shoes tapped instead of buying a new pair, and that this amount "loaned to the Government will help the nation win the war." If John D., Jr., is not ashamed to wear old shoes in order that he may make his subscription to democracy's bulwark a little bit larger, surely the rest of us should not hesitate to emulate his example. This war will be won by the aid of the small man's dollars not the great man's millions.

A New Realization

OUT of all the uncertainty and confusion caused in our industrial life by the war, one truth looms large—coal is vital. One German scientist has predicted that coal would decide the war. That prediction was made before America entered the conflict, and if the prophecy is true, Germany's doom is sealed.

The Scandinavian countries are absolutely at the mercy of the Teutons, due to the latter's control of all the available fuel. It is no wonder that the Germans can exact practically any compensation they please from Sweden, Holland and Denmark. If America finds another nation or two arrayed against her, it will likely be due to Germany's hold on Europe's coal supply.

In Sweden 300,000 workmen depend for their livelihood on there being a sufficient supply of coal to maintain the nation's industries. The Germans sell coal, but not for money. The compensation required for their fuel is horses, cattle, food supplies, etc. British coal in Stockholm is \$95 per ton. No wonder Sweden is alarmed by our recent export rulings that will render it difficult for her to pay the German price for fuel.

The fuel situation in Russia is even worse. In many localities there is barely enough fuel to operate the railroads. The Russian winter is not a mild affair, and great suffering is certain to ensue before another summer rolls around. The situation in France and Italy is likewise critical. America is their principal hope.

As for the European neutrals, no one need expect those countries bordering on Germany to break relations with the Teuton government so long as the United States and England do not relieve the present fuel stringency. As we will have our hands full helping the Italians and the French, the political course of the Scandinavian countries and Switzerland is plain.

Illinois Civil Service Commission

AN INTERESTING feature of the work of the Illinois State Civil Service Commission is the efficiency with which the examination of candidates for different state offices has been planned. This is particularly noticeable in the outline of examinations for the office of mine-rescue superintendents. There are, at present, six of these superintendents holding office in Illinois.

The examination of candidates for this office is divided into five parts. The first two parts occupy the first day and are written examinations devoted to first-aid, mine-rescue work and general mine operations respectively. The third part, given another day following the written examination, consists of an oral interview with practical tests relating to rescue work under mining conditions. The fourth part consists of a physical examination by a medical examiner, to determine the physical fitness of the candidate for the duties of the office of mine-rescue superintendent. The fifth and final part is a written examination designed to show what training and experience the candidate has had that would recommend him for appointment to the said office. The candidate can complete this part of the examination at his home, if he so desires. He is warned, however, that it is very important to give complete information showing his qualifications for the position, in order that full credit may be given him for everything of value.

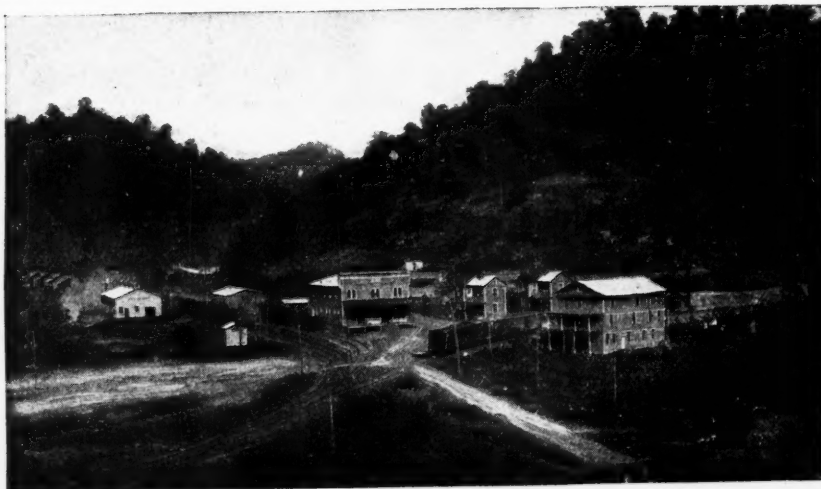
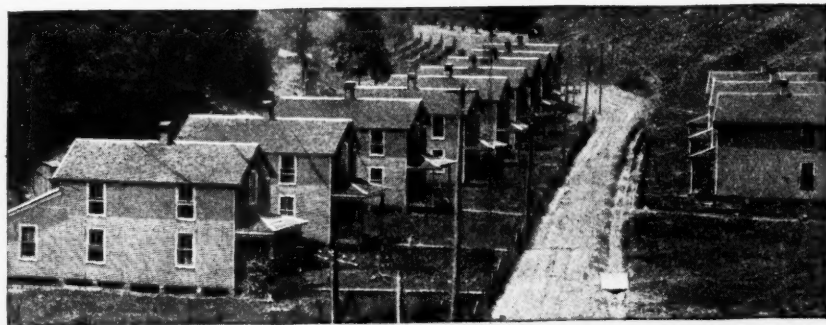
A total of ten points is allotted to the examination of each candidate, seven of which relate to the first three parts of the examination, while the remaining three points refer to the fifth part. A minimum weighted average grade of 65 per cent. is required on the first and second parts. Only those candidates receiving this or a higher grade are permitted to take the third part of the examination, in which the minimum grade required to enable the candidate to pass is 70 per cent.

Candidates that have passed the first three parts of the examination are notified to appear before the medical examiner to undergo the physical test. A rating of "Poor" in the physical examination will generally disqualify a candidate who would be competent otherwise. In the physical examination, attention is given to the facts of age, height, weight, previous illness, or injury, vaccination, general health and physical capability of the candidate.

On another page of this issue will be found a portion of the examination given candidates for the position of mine-rescue superintendent, Sept. 15, 1917, which has kindly been forwarded to *Coal Age*, by W. R. Robinson, secretary and chief examiner of the commission. The congratulations of *Coal Age* are extended to the secretary and members of the commission for the good work that has been accomplished in Illinois since the establishment of the mine-rescue work in the state, by the act of legislature, approved June 5, 1911.

Snapshots in Coal Mining

VIEW ALONG
THE MAIN
STREET OF THE
MINING VILLAGE
OF THEALKA,
KY., HOME OF
THE NORTH
EAST COAL CO.



GENERAL VIEW
OF THE PLANT
OF THE NORTH
EAST COAL CO.,
THELKA, KY.,
SHOWING COM-
PANY STORE
AND GENERAL
OFFICES

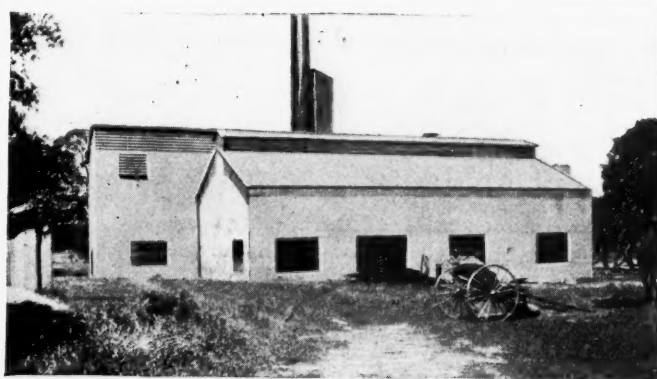
ANOTHER VIEW
OF THE MINING
TOWN OF THEAL-
KA, KY., HOME
OF THE NORTH
EAST COAL CO.



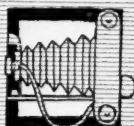


TIPPLE OF IONE COAL AND IRON CO., IONE, CAL.

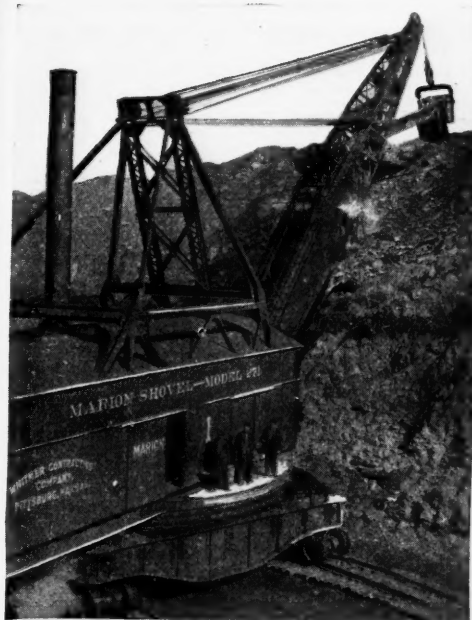
Now only used to hoist cars to bunkers



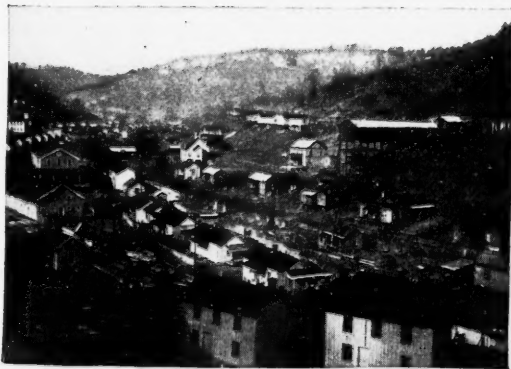
BRIQUETTING PLANT OF LIGNITE FUEL CO., MAY, CAL.
Only lignite briquetting plant in California



34-TON CAR PULLED BY DONKEY ENGINE
FROM PIT TO LOADING TIPPLE



MARION SHOVEL WITH 5-YD. DIPPER
Whitmer Contracting Co., Pittsburg, Kan.



MENDEN (W. VA.) TIPPLES AND HOUSES
New River & Pocahontas Consolidated Coal Co.



NO. 7 STEEL TIPPLE AND FANHOUSE
United States Coal and Oil Co., Holden, W. Va.

Discussion by Readers

Test of a Man's Capability

Letter No. 2—An examining board can, no doubt, tell when a man is qualified by law to fill the position of mine foreman, but one does not need to talk long with a man in that position to tell what he knows of the actual work in his charge. There are men who hold certificates and yet know less of practical mining than others who have none.

Not long ago two other men and myself while hunting work approached a mine where we had never been before. The young man who was pointed out to us as foreman, in response to our inquiry for work, said, "What do you want to do?" I asked for and was given a job driving a mule; and, likewise, my two partners asked for and were given a machine—the one was to run the machine while the other shoveled back the cuttings.

Our stay at that mine was short, lasting about a week, when we went one morning to a mine close by and were able to pick out, at once, the foreman in charge, who was standing in the yard. A glance at the man told us that he was a capable official. His first words were, "What can you boys do?" We replied, "We can drive, run machines, or do anything else you have for us."

Looking hard at us for the second time, he said, "You look to me like mule drivers. I need machine-men, but can give you each a mule if you want it."

It did not take us long to accept his offer and start for the boarding house. On the way, one of the boys remarked, "You can't fool an old head at the business." The fact of the matter was none of us had ever done anything in the mine but drive a mule, and this foreman's estimate of our capabilities was correct.

Crawford, Tenn.

MULE DRIVER.

Social Side in Mine Organization

Letter No. 1—One of the most difficult problems met with in the organization and management of a mine is one that is seldom mentioned in the discussions that appear in technical journals, although it involves one of the most vexing questions that confront mining executives everywhere.

Not long ago an article appeared in *Coal Age* [Vol. 10, p. 769], entitled "The Superintendent's Wife." Though the writer treated but one phase of this subject, I venture to say that more than one superintendent, who would fail to be intimidated by a delegation of angry miners, anxiously allowed his copy of *Coal Age* containing the article to lie around the house in hopes that his wife's eye might catch the page and the lesson taught go home.

I doubt not that the problem of making the families dwelling in a small mining town or camp pull together is responsible for many a gray hair on the head of

the master of ceremonies. I once overheard an executive remark that if the man was ever born who could accomplish this feat he would be a good candidate for the position of campaign manager of the Prohibition Party, and would certainly sweep the State of Pennsylvania by an overwhelming majority.

Many painstaking efforts of mine officials for the building up of an organization are seriously hampered by personal jealousies and dissensions among the employees and their families. I imagine that the average manager, in the face of such difficulties, would compare well to the knight of old, who, fully equipped for battle in his suit of armor, suddenly found himself with a flea between his shoulder blades.

A TRIVIAL DOMESTIC EPISODE

The remarkable feature of these difficulties is that, in nearly every case, they start from some trivial matter that scarcely amounts to, as we say, "a row of pins." For instance, the mine superintendent notices that Smith, the chief engineer, and Jones, the outside foreman, are at loggerheads, and are not working well together. A few casual inquiries develop the fact that Smith's wife borrowed a pound of coffee from Mrs. Jones, but neglected to return it at once. Two weeks later, when Jones sat down to a coffeeless breakfast, his wife proceeded to explain that Mrs. Smith was to blame for not returning what she had borrowed a fortnight ago. In no pleasant mood, the wife at once sends to Mrs. Smith, reminding her of her neglect.

It was now the Smith woman's turn to be irritated at being told of her faults and, as a rejoinder, she sends back much more coffee than she had borrowed, in order to show her contempt for a neighbor who would ask for the return of a pound of coffee and not wait her pleasure to make it good. A few days later, Mrs. Jones passed Mr. Smith and his wife on the street without speaking, and it was then time for Smith to show his resentment toward the foreman, which he did by failing to cooperate with him in the performance of his daily duties. One would scarcely believe that 50c. worth of coffee could be the innocent cause of friction between two employees that meant much loss to the company for whom they were working.

THE "S. O. S." CALL THE TEST OF FRIENDSHIP

The chances are that if the Smith family were in real trouble, the Jones tribe would not hesitate a moment in helping them out to the extent of their resources and *vice versa*; but the incident shows how a petty annoyance in the social circle can grow into such proportions as to disturb the harmony of mining operations, in a small town or camp.

It can readily be seen that a superintendent, confronted by such a situation must either exercise some real ability as a diplomat or be forced to make a change in his employees. Many a superintendent would choose

to break in a new man rather than assume the thankless rôle of a peacemaker, even though his better judgment prompted him to make the effort.

Often a tactful word or frank talk with the parties may serve to show the affair in its true light. I know of one superintendent who has been remarkably successful in developing a loyal spirit among his men by following this method of a heart-to-heart talk when the occasion arises. He has often reminded an employee of the need of making allowances for the other fellow's faults, particularly when his own wings are somewhat undeveloped.

THE SECRET OF A SUPERINTENDENT'S SUCCESS

The secret of this superintendent's ability to make such talks effective does not lie in the words he uses, but in the confidence he creates among his men. A large part of this confidence has been won by years of straight dealings with them in their work. It is safe to say that the consideration and sincere interest shown by the man himself and his family, in the social life of the camp, has played an equally important part.

Now, in closing, let me ask, What is the application to be made in respect to the mining industry? It was a wise man who first remarked that "no house was ever big enough to hold two families." The same principle applies to the social life of a small mining town or camp; but there is a way to fight this condition. While the very best of pianos will get out of tune, the remedy is not in tearing out the discordant strings. What is needed is a readjustment to bring those strings into the desired harmony. This requires an exceptionally good ear and a skillful practitioner.

In the mining camp, the superintendent is the practitioner and, incidentally, his family are involved. They are the ones who must eliminate the discordant factions in the camp life, and this is done most effectively not by preaching but by example. When a superintendent and his family enter into the social life of the camp or town in a broadminded spirit they will do much to eliminate petty jealousies and establish in the organization a true spirit of coöperation in a common purpose of betterment and a higher standard of living. Let us all try.

P. L. MATHEWS.

Santo Tomas, Tex.

Artificial Respiration

Letter No. 3—The question of artificial respiration, submitted by Joseph A. Greaves, *Coal Age*, Aug. 11, p. 256, should bring forth an interesting discussion, which we may yet hope to see.

There are two methods of resuscitation in general use—the Schaefer and the Sylvester methods, both of which I have seen applied to revive men overcome or rendered unconscious in and about mines. The former method is the one that is used and taught by all the large electric companies. It is also the method employed in the United States Army, as being the best means of restoring breathing in the body of a person overcome.

Before describing this method of resuscitation further, let me say, in reference to a person overcome by electric shock, there are many things to be done before the patient can be treated with a view to reviving him.

The ordinary trolley wire used in and around mines carries from 500 to 1000 volts and has often been the cause of accidents of this nature, due to persons coming in contact with the wire.

If the person is still in contact with the wire, he may be either unconscious and unable to remove himself from danger; or, if conscious and holding the wire, he may be unable to release his vise-like grip. In either case, he is dependent wholly upon what others can do for him, and there is no time to be lost in looking for a switch to turn off the current.

In a mine, there is almost always a drill, bar, or other implement of iron, which, thrown across the wire may trip the circuit breaker in the power house, and thus break the current. If no such implement is at hand, however, recourse must be had to other means to release the man from his position in contact with the wire.

DRAGGING A MAN FROM A LIVE WIRE

In attempting to drag a man off from a live wire or rail, care must be taken to avoid receiving a part of the current by contact with his person. To touch the bare skin of his hands or neck would be to risk receiving a serious shock. If a dry board, or a piece of dry wood or paper can be found to stand on, it will help to insulate the person of the rescuer.

Grasp the victim by his clothing if that is dry, or one may use his own cap or coat or other dry nonconducting material to reduce the risk of contact and shock. It is better to use one hand only, but if two hands must be used be sure that they are well insulated to prevent being caught in the same manner as the victim of the accident.

If an axe is at hand, it may be possible to cut the wire and thus break the circuit. In doing this, however, it is important that the handle of the axe should be perfectly dry, or wrap a coat or other loose cloth or paper about it. As quickly as the victim has been released from his contact with the wire or rail, proceed to give him treatment for restoring respiration, without waiting to loosen or remove any of his clothing, which must be done later.

APPLYING THE SCHAEFER METHOD

In applying the Schaefer method, which I very much prefer, it is important to remove the patient to fresh air as quickly as possible, which will greatly facilitate the work of resuscitation. With one finger feel in the victim's mouth to see that it is free from any obstruction, such as tobacco, false teeth or pieces of coal. Lay the patient on his stomach with his arms extended forward as far as possible and with face turned to one side so that his nose and mouth will be free for breathing. Let an assistant pull the man's tongue out so that it will not obstruct the passage of breath.

Now, kneel astraddle of the patient's thigh and, facing his head, rest the palms of both hands on his loins or the muscles of the small of his back, spreading the fingers over the lower ribs. Then, with arms held straight, swing slowly forward so that the weight of the body is brought to bear gradually and without violence upon the patient. This act should take about 3 sec. Again, swing back so as to remove the pressure, and repeat the movement forward and back regularly from 12 to 15 times a minute.

While this operation is proceeding, an assistant should loosen all tight clothing about the chest, neck or waist of the victim. Artificial respiration should be continued, without interruption, until natural breathing is restored. Efforts to produce this result should not be discontinued under two or more hours, or until a physician arrives and the victim is pronounced dead. Should breathing again cease after once starting, repeat the artificial respiration. Put no liquid of any kind in the patient's mouth until he has fully regained consciousness. Keep the body warm.

In my opinion, the Schaefer method is the best method to apply when a person is overcome with gas in a mine, or when a person is rescued from drowning and is in a state of unconsciousness. It is important, in that case, to do everything possible to drain the water from the lungs of the victim who should be laid on his face, grasped about the stomach and raised slightly, making sure that the tongue hangs forward in the mouth and does not obstruct the throat. I have seen a man revived after being under water 20 min., by the use of this method.

FIRST AIDER.

Kingston, Penn.

Education vs. Experience

Letter No. 1—The numerous references, in *Coal Age*, to the relative value of technical knowledge and experience, in the operation of coal mines, has led me to wonder which of these is of the greater value to a mine official in charge of underground work.

As an illustration of how practical mining men often regard mining education or, as they term it, "book learning," allow me to cite an incident of my own experience, when attempting to impress the need of study and the habit of reading upon an old experienced mining man who had charge of a mine in the Cahaba coal field, in this state.

As superintendent and mine foreman combined, this man had achieved some success in the practical operation of a mine. He had met many difficulties, some of which he had but partially overcome, owing to his limited knowledge of some of the simplest principles of coal mining. In early life he had been deprived of schooling and had been sent into the mines at the age of 10 years, in Scotland, his native country.

Becoming acquainted with this man of practical experience, I advised him several times to form the habit of reading mining books and papers, stating that it would prepare him for the examination, which he would have to pass in order to obtain a first-class mine-foreman's certificate. His reply was that he did not think there was much in it, and claimed that his practical experience would get him the certificate.

THE EXAMINATION OF A "PRACTICAL" EXPERIENCED MINER

The result of his examination before the board compares quite favorably with that published in *Coal Age* some time since [Vol. 11, p. 313], and I beg to submit it here, as evidence of a practical man's actual knowledge of some of the important features and principles on which successful mining depends. The examination follows:

1. State your age.

Ans.—oi am 50 years old.

2. Where born?

Ans.—Yes.

3. Give experience in this state and other countries where you have worked.

Ans.—oi went into the mins at the age of 10 and got to be fire booze in the mins, then oi Came to america in the year of our Lord 1881 and have Bin Boozing of and on ever Since.

4. State what experience you have had in handling the different gases in the mines and explain how they act on human beings; where to find them; their chemical symbols and specific gravities.

Ans.—There is fhite Damp Black Damp, Green Damp, Blue Damp. then there is the fire damp and after Damp and the Stink Damp. the others is to numerous to mention.

5. If you had charge of opening up a new mine, how would you proceed? Also, how would you get your men organized or placed for the different jobs?

Ans.—oi would not organize them at all. oi would just run it on the open shop Plan.

6. What is a shaft?

Ans.—it is nothing But a hole in the ground Strait up.

7. What is the best haulage system? Which one do you prefer?

Ans.—the Best System is the Mule and have your Track Strait and Short as Possible all over the Mins.

8. In working a mine pitching 20 degrees how would you set your timbers to support the roof?

Ans.—Sure oi would Put one end of the Post to the Bottom and the other end to the Roof.

9. Name the different methods of working mines and explain the methods of working longwall.

Ans.—there is the long Wall, the Short Wall, Room and Pillar, Pillar and Stall System, also the Pick and Sleeve and Collar and Elbo system, the Wheel Brae and Barney System and the Panhandle System.

10. Name the different methods of ventilation and give us your idea of the best system to adopt in ventilating a mine.

Ans.—oi would use a fan of Course and have my air split up so that oi would send it Back to the Fan as Short as possible.

11. What are the duties of a miner when going into his place in the morning, and what is the first thing he must do for safety?

Ans.—after He would get to His Place he should take all his Clothes off then sit Down and take a good Smoke to Himself. then go up to the place and see how his Shot done. then the main thing after that is to see that he Checks all his Cars.

12. How can a mine foreman get the best results and maintain the respect of his workmen?

Ans.—Sure oi would give the Best Places in the Mins and always listen to their Complaints and Promise thim everything they asked for.

13. In blasting coal what is the safest powder to use and what kind of tamping would you prefer? Also, what kind of tools are the safest to use in tamping the charge?

Ans.—oi would use the Rammer, the cooter, the nadle and the claner.

To the credit of our practical mining men, however, it can be said that there are many men of limited

education whose practical ideas would enable them to grasp the meaning and answer the questions asked in examination with far better results than the answers just given indicate. At the same time, this is not an isolated case, as there are many men of practical experience who could do no better in examination than my friend, who's boast was his practical experience. The question is: Is such a man qualified for the position of mine foreman?

ROBERT GIBSON.

Maylene, Ala.

Accumulation of Mine Gases

Letter No. 1—In answer to the request for the experience of readers in regard to the accumulation of two gases in the same place, as mentioned in the inquiry, *Coal Age*, Sept. 15, p. 468, permit me to cite an instance that came under my own observation when working in a mine where the conditions invited the accumulation of blackdamp and firedamp in the same place, at the same time.

The seam in which I was working was a 9-ft. seam of coal, in Fayette County, Pennsylvania. This portion of the seam was underlaid with a soft fireclay that gave considerable trouble by swelling. The seam contained large quantities of water, which kept the miners busy at the pumps, a single pump serving to drain the water from five or six working places. The coal had a considerable pitch and was overlaid with a roof shale varying from 6 to 10 ft. thick, above which was a hard sandstone of great thickness.

Flats or levels were driven off the main slope and, from these, butts were driven up the pitch and rooms turned to the right and left on the strike of the seam. For some reason, the drawing of pillars in the rooms had been abandoned years ago; and when this work was again resumed, in the lower levels, it was found that the top and bottom had come together, or, in other words, had "kissed each other." It was necessary, then, to cut through the bottom in order to reach the pillar coal that was to be taken out.

It was warm work and, often, when digging a hole to obtain a firm footing for a post, the miner would call to his buddy, "Put your hand in this hole and feel how warm it is." I mention this as showing the heat developed in the strata due to the settlement of the overburden, which had been taking place for a considerable period of time, owing to the unbreakable "big rock" as it was called.

One feature that was particularly noticeable in this portion of the workings was the large quantity of blackdamp, which caused the lamps to burn very dim in places, while at other points the air was better. However, the miners experienced little trouble, because of the condition varying from point to point. I was firmly convinced that the carbon dioxide came from the bottom.

The work of extracting the pillars progressed favorably and had reached No. 4 room, on No. 4 butt, when the incident of my story occurred. At this point the heaving of the bottom had been slight and all that was necessary was a little grading to relay the track along the rib. The same condition prevailed here, however, with regard to varying quantities of blackdamp, and I had just remarked that this gas was the better one of

two evils—blackdamp and firedamp—when, the same day, a fall occurred on the ends of the ribs, breaking the roof to the sandrock.

The fireboss came and asked me to go with him, saying, "Now, I'll show you the other gas." Climbing to the top of the gob, I found a good current of air sweeping around the ends of the pillars. Ten feet from the end of the pillar, on top of the fall, there was the wickedest firedamp mixture I ever found anywhere.

Thus, while there was a large accumulation of firedamp on top of the fall, in this room, blackdamp could be detected at numerous points along the rib and the gob was practically full of blackdamp, which often required the stretching of canvas in all directions, on idle days, to deflect the air current so as to sweep away the accumulated gas and keep the place clear for work the following day.

EXPERIENCE.

Berlin, Somerset County, Pennsylvania.

Practice in Blasting Coal

Letter No. 9—In his letter, *Coal Age*, Aug. 11, p. 253, W. A. Barrett explains the reason for the employment of shotfirers as being "a humanitarian one, having for its purpose the risking of fewer lives at the time of firing the shots." He explains that should a blown-out shot cause a gas or dust explosion, "the only ones endangered would be the shotfirers themselves."

It would seem that Mr. Barrett has overlooked the main reason for the employment of shotfirers, which has for its chief purpose, I believe, reducing to a minimum the possibility of an explosion. It is well known that when the miners are permitted to fire their own shots within a period of a few minutes, at the close of the shift, the danger of trouble resulting from the production of a large quantity of dust and gases is much more imminent than when these shots are fired in rotation, a few at a time, as is the case when shotfirers are employed.

Consider, for a moment, a mine where the coal is shot off the solid. This practice requires the shooting of two or three shots by each miner, before leaving his chamber, at the end of the shift. If he does not do this, he will scarcely have enough coal down the next day to load his turn. The firing of these shots can be done with greater safety and less liability to accident when men are employed for this work, and time is given for the air current to carry away the dust and gases.

A PRACTICAL ILLUSTRATION

For the sake of illustration, let us suppose a mine producing 1000 tons a day, the coal being all blasted off the solid and the shots being fired by the men within a few minutes of quitting time. It is easy to imagine what will be the condition of the mine air when, say half a ton of powder, producing over 3000 cu.ft. of gases, largely combustible, is exploded in the workings of the mine within a period of from 15 to 20 minutes.

In addition to the gases produced by the explosion of the powder there is a large quantity of fine coal dust thrown into the air, and the mine temperature is perceptibly higher. Suppose a blownout shot occurs under these conditions, would there not be a strong possibility of an explosion of some magnitude taking place, which would extend throughout the mine?

On the other hand, assume that all the shots are fired by competent shotfirers after the men have left the mine. Each shotfirer starts to fire the shots in his district on the end of the air and proceeds regularly, firing the shots in rotation. The gases produced by the explosion of the powder and the dust raised by each blast are carried out on the current.

If the shotfirer is wise, he will give sufficient time for the current to reestablish itself, after firing the shots in one place and before lighting those in an adjoining place. By this means there can be little doubt that the liability of an explosion of gas or dust taking place will be decreased.

For these reasons, I believe that competent shotfirers should be employed in all mines where the shots are fired at a set time, and that the work should be done by these men after the others have left the mine. This is important where the coal is shot off the solid.

Briceville, Tenn.

U. S. WILSON.

Treatment Accorded Miners

Letter No. 1—Many references have appeared in *Coal Age*, in regard to the shortage of labor in mining. Numerous causes and remedies have been suggested for this condition, some of which are practical and others imaginary. The fact is that, owing to the present stringency and demand for men in the various industries, the present situation in mining can only be relieved, at the best.

What seems to me to be the most important consideration, in this connection, is the ability to satisfy the men working in the mines. So many opportunities are open to them and the allurements are so flattering that many are drawn away from the mine. It is really alarming to note the number of men who are continually coming and going from our mining camps.

SELF-EXAMINATION OF A MINE SUPERINTENDENT

The questions that present themselves to every serious-minded superintendent are: "Am I doing everything possible to conserve the labor employed in and around the mine? Are my foremen and their assistants doing all in their power to satisfy the men in their charge? Personally, as a superintendent of mines, I feel that a great responsibility rests upon all mine officials in this regard.

The most important fact in the operation of a mine is the ability of an official, while dealing justly, to satisfy his men and keep them contented. One important feature is the treatment of newcomers, who should be made to feel at home at once. They should be received courteously and given the consideration that a stranger deserves. Even experienced miners feel strange, for a time, when starting work in a new mine.

My experience has been that enough attention is not given to this particular phase of the game. A new man is hired and assigned a working place. He is given a note telling where he is to work, by naming the section of the mine and the number of his room, and then left to find his own way in a strange mine. Few will deny that this is not treating the man courteously or showing him any consideration. He concludes that self-interest is the controlling factor in that mine and naturally assumes the same role himself.

How different is the case where a newcomer is received with the courtesy due a stranger—where he is made to feel that the company and its officials are ready to extend to him every consideration that will assist him in starting work in his new place. The foreman takes him in hand, after he is registered in the office, conducts him into the mine and shows him where he is to work, or turns him over to one of his assistants for that purpose. The man finds his new place ready for work, the falls have been cleaned up, track laid to the face, the coal undercut, and a car standing ready to be loaded.

The man must be oblivious to surroundings and dense, indeed, who would not be impressed with such treatment accorded him at the start. Nothing will convince one more firmly that he has found a place where he will be glad to work. The coal may not be as thick as he could wish, or the roof as solid as in some places where he has labored. The place may require frequent setting of posts and the exercise of care and caution to avoid accident; but the treatment received makes these difficulties appear incon- siderable, and the man is led to regard them lightly.

FIRST IMPRESSIONS ARE LASTING

It is the first impression that a newcomer receives that is lasting and determines whether he will make the place his home or look further when he has secured a little needed cash to help him on his way. It is important, however, that the miner's first impression shall not prove deceptive. For instance, when an official visits a miner's place, he should observe that the man is getting his proper turn and is supplied with his share of empties and whatever material is needed in his place.

A common complaint among miners is that their coal has not been cut, which compels them to lose much time. This is a matter that interests every foreman as much as the miner himself, as it means a reduction in tonnage for the mine; and the foreman will not delay to see that this is remedied, if possible.

Another common complaint is that the miner has lost cars. In most instances this may prove to be the case; but all miners are not honest, and the claim of "lost cars" must be carefully investigated by the foreman, as the granting of such claims without full investigation will only tend to increase the number of similar complaints.

In conclusion let me repeat that while natural conditions in a mine play an important part in securing and holding men, of far greater importance, in my opinion, is the treatment they receive. A seam of good coal, 6 or 8 ft. thick, and overlaid with good roof, insuring good working conditions, is often more than counterbalanced by a poor car supply and the scarcity of material furnished the men.

These and other causes decide men to seek fields where better service is afforded. The successful company is the company where every official, from superintendent down to driver boss, feels that upon him more than anyone else rests the responsibility of keeping the men satisfied and contented. The efforts of these officials will be appreciated by the men and they will reap the reward they deserve in these trying times.

—, Colo.

SUPERINTENDENT.

Inquiries of General Interest

Shotfiring in Gaseous and Nongaseous Mines

In connection with the question raised by the inquiry that appeared in *Coal Age*, Sept. 1, p. 385, relating to the employment of firebosses in Colorado, it would be interesting to know to what extent the work of shotfiring is safeguarded in mines generating gas; or, in other words, to what extent the mining laws of different coal-mining states discriminate between the firing of shots in gaseous and nongaseous mines.

From the large number of accidents caused by blasting in presence of gas, it would seem that there is not sufficient attention given to this matter in state mining laws. When one considers that it is possible for gas to appear at almost any moment, in mines or portions of mines where no gas has been detected previously, it appears important that greater emphasis should be placed on the need of safeguarding the work of blasting.

_____, Colo. INQUIRER.

As our correspondent has stated, the need of discriminating clearly between the firing of shots, in mines generating gas and those where no gas has been found, is of the greatest importance. We regret to say that the coal-mining laws of many important coal-producing states regard this matter too lightly.

The Mining Law of Colorado, the home state of our correspondent, requires (sec. 154) that no shot shall be fired in a place where gas may be expected, until the place has been examined by a shotfirer and the gas, if found, removed. The law requires the certification of the shotfirer.

The Bituminous Mine Law of Pennsylvania requires (sec. 14) the employment of shotfirers in all mines or portions of a mine where explosive gas is generated in quantities sufficient to be detected by an approved safety lamp. The shotfirer must charge, tamp and fire all shots that, in his judgment, are safe. He is authorized to refuse to fire any holes that he considers are not properly placed. Electric apparatus must be used for firing all shots and no person but the shotfirer is permitted to connect the wires or to fire the shots. The law permits no shot to be fired in any place where a safety lamp indicates gas is present. These restrictions apply only to mines generating gas.

The Anthracite Mine Law of Pennsylvania does not require the employment of shotfirers, but specifies (art. 12, rule 35) that the mine foreman must be satisfied that the person he permits to fire a shot is fully qualified, and (rule 11) must grant permission before any shot can be fired in any mine where locked safety lamps are used.

The Mining Law of Illinois, in the article relating to shotfiring, requires (sec. 2) the employment of shotfirers who are practical experienced miners, to fire all shots where more than 2 lb. of powder is charged in the hole,

or in mines where gas is generated in dangerous quantities. A shotfirer is not permitted to fire any shots until all the men have gone out of the mine except mine officials and those whose duties require them to remain in charge of pumps, stables, etc. The law forbids a shotfirer to fire any shot that, in his judgment, is unlawful or not a workmanlike, proper and practical shot.

The Mining Law of Ohio permits the firing of shots by miners, but specifies (sec. 956), "He shall not fire a blast in any working place which is likely to generate sudden volumes of firedamp or where locked safety lamps are used, except with the consent of the mine foreman or other competent person designated by the mine foreman for that purpose."

The Mining Law of Alabama is practically the same as the Ohio law, in respect to the firing of shots in mines. Miners are permitted to fire their shots; but (sec. 79) it is "unlawful for any miner, shotfirer or workman to fire a blast in any working place that is likely to generate sudden volumes of firedamp, or where locked safety lamps are used, except with the consent of the mine foreman or other competent person designated by the foreman for that purpose."

The Mining Law of West Virginia, likewise, permits the firing of shots by the miners, but requires (sec. 78) that "no shots shall be fired in any place known to liberate gas, until such place has been properly examined by a competent person who is designated for that purpose, and . . . until said gas has been removed by means of ventilation."

The Mining Law of Tennessee provides (sec. 30) that the chief mine inspector or the district inspector, in connection with the superintendent and foreman of the mine, shall formulate such rules and regulations as they consider necessary, controlling the number of shots to be fired, the manner of preparing the shots, amount of charge to be used, the time and manner of firing. A fine is provided of not less than \$25 or exceeding \$200 and imprisonment, at the discretion of the court, for any violation of such rules and regulations. The law thus places the responsibility wholly on the inspection department and the management of the mine.

The Mining Law of Kentucky provides (art. 10, sec. 1) that, in all coal mines where ten persons or more are employed at one time and where explosive gas is generated in dangerous quantities or coal dust is known to accumulate in like dangerous amounts, the operator or superintendent, by direction of the chief or district mine inspector, shall employ practical, experienced miners to act as shotfirers. The shotfirers are required to charge and fire all holes drilled by the miners, except such holes as the shotfirer deems are not properly placed. Sec. 3 of the law forbids a shotfirer to fire any shots until the miners have left the mine and only mine officials and others whose duties require their presence remain. The law provides a penalty not exceeding \$50 in the discretion of the court or jury, for any violation of the act.

Examination Questions

Mine Rescue Superintendents' Examination, Sept. 15, 1917

(Selected Questions)*

Ques.—Describe the Schaefer method of resuscitation.

Ans.—The Schaefer method of resuscitation is fully described in letter No. 3 entitled "Artificial Respiration," p. 643 of this issue of *Coal Age*.

Ques.—What use is made of the following first-aid supplies: (a) Bandages; (b) compresses; (c) splints; (d) tourniquets?

Ans.—(a) Bandages are applied for at least four purposes in first-aid work: (1) To bind a dressing and hold it in place. (2) To hold splints in position on a broken limb. (3) To arrest bleeding from an artery or vein by pressure. (4) To serve the purpose of a sling to support a broken arm.

(b) A compress is used to apply a dressing to a wound or protect the latter from the air, dirt or other foreign matter.

(c) Splints are used to bind together the parts of a broken bone, so as to prevent further injury by the laceration of the flesh, which might occur from the movement of the broken parts.

(d) Tourniquets are used to apply pressure on a severed artery or vein, for the purpose of arresting the flow of blood until the rupture can be closed, or to give it opportunity to heal.

Ques.—Assume you were to give two lessons in first aid to miners, the intention being to impart sufficient knowledge to warrant their giving first aid to the injured; what features of first-aid work would you emphasize?

Ans.—Among the important points to be emphasized in giving first-aid instructions are the following: In case of accident, notify the proper mine officials to send at once for a doctor; keep cool, act promptly and manifest a cheerful disposition, which will give confidence and assurance of ultimate success. Remove the victim to fresh air as quickly as possible, or place him in a comfortable position, taking care to handle him so as not to increase his pain or injury. Examine the injured parts closely to ascertain the nature and extent of the injury, and note the condition of the victim, who may be suffering from shock and nervousness or may be unconscious. Permit no crowding or loud talking.

Ques.—Assume a miner has fallen on a live electric wire and is unconscious, his chest and arms being burned. Describe procedure of rescue and treatment.

Ans.—This question, also, is fully answered in letter No. 3 entitled "Artificial Respiration," p. 643 of this issue.

Ques.—A, B and C are injured in a mine. The injury to A causes bright red blood to flow in spurts. The

injury to B causes purple or dark colored blood to flow, not in spurts. The injury to C causes blood to ooze from the injured parts. State how you would treat each case, and distinguish the nature of the injury.

Ans.—The injury to A is due to a severed artery, as indicated by the bright red color of the blood and its spurting, which is the result of the pulse or throb caused by the action of the heart, which forces the blood through the arteries. This pulsation affects the arteries but not the veins, and produces the spurt observed when an artery is severed.

The injury to B is due to the severing of a vein, as indicated by the dark purplish color of the blood, which is the result of the absorption of the impurities of the body in its passage through the system.

The injury to C is due to a cut or bruise that has broken the capillaries, which are so widely distributed over the surface of the body and limbs. This fact is indicated by the slow oozing of the blood from the injured part.

The severing of an artery causes the most dangerous form of bleeding, and must be treated by applying pressure on the artery at a point between the wound and the heart, by the application of a bandage and tourniquet, placing some hard substance under the bandage immediately over the artery to compress it and stop the flow of blood. The patient must be placed in a recumbent position, with head low, so as to favor the flow of blood to the brain and prevent lapse of consciousness. Avoid violent movement and excitement. Give plenty of air, keep warm and quiet; give no stimulants, except if patient seems to show signs of collapse, when a half teaspoonful of spirits of ammonia added to a table-spoonful of water or whiskey should be given.

When a vein has been severed the danger is not as great. Loosen any bands or tight clothing, and otherwise do everything to help the flow of blood back to the heart, which is assisted by elevating the injured limb or other portion of the body so as to utilize the effect of gravity. Venous bleeding should be treated by applying a compress directly over the wound and binding tightly with a bandage.

Capillary bleeding is arrested by the application of a bandage to the wounded part. The application of alum or ice is an effective means of quickening the coagulation of the blood and arresting the bleeding. Capillary bleeding is the least important form of injury of this nature.

CORRECTION—Attention has been drawn by several readers of *Coal Age* to an error in the solution of the last question on page 552, issue of Sept. 29. The formula for pressure is correctly given, but the answer is 5.44, instead of 146 lb. per sq.ft. This, substituted in the formula for finding the horsepower producing the circulation, gives

$$H = \frac{Qp}{33,000} = \frac{38,800 \times 5.44}{33,000} = 6.4 \text{ hp.}$$

The error was due to the inadvertent use of a wrong quantity in the solution, which we regret.

*The questions on this page were taken from the recent examination held at Springfield, Ill., by the State Civil Service Commission, W. R. Robinson, secretary and chief examiner.

Coal and Coke News

For the Busy Reader

Invest in a bond of the Second Liberty Loan. It pays 4 per cent. interest and helps Uncle Sam.

Agents of the Federal Trade Commission, cooperating with the Fuel Administration, are investigating retail coal prices in New York.

Examination of titles is under way in another big land deal involving coal under more than a dozen farms in the Pittsburgh (Penn.) district.

Before any changes in price or policy are made, the fuel administration promises to direct its attention to the coal situation in Iowa and Illinois.

Users of coal, by learning proper methods of handling coal fires, may show their patriotism and at the same time conserve their pocketbooks.

Coal operators state that the railroads are undermanned. Slow transportation, even more than car shortage, threatens to leave cities short of coal when the first real cold weather sets in.

Coal jobbers throughout the country were ordered to register with the Federal Trade Commission by Oct. 25, stating the financial interest in mines of all stockholders and partners of jobbing concerns.

The coal situation in Ohio is still chaotic, the Federal measure heretofore adopted having been wholly without effect. There is no relief in sight until Nov. 15, when the Great Lakes shipping season closes and the Northwest preference is raised.

Dr. Garfield emphatically states that any dealer who sells coal at prices netting him more than 30 per cent. in excess of his profit per ton in 1915, is to be prosecuted, not once, but for each time he so violates the term of the price-fixing order.

There is no good excuse for a coal shortage in Utah, Idaho, Nevada and possibly California, if ample and regular car supply is made available at the Utah coal mines to enable producers to work their men six days a week, says A. H. Clowie, vice president and general manager of the Utah Fuel Company.

A final move to prevent supplies from reaching Germany from the outside world was taken when the Exports Administration Board decided to refuse coal to neutral ships carrying supplies from Canada, Mexico or any of the South American countries to the European neutral countries, unless their cargoes are inspected in American ports.

Bituminous coal miners won their fight for a general wage increase. Under the new agreement an increase of 10c. will be paid for pick and machine mining; day labor will be advanced \$1.40 a day; pay for yardage and deadwork will be increased 15 per cent.; trappers will get 75c. a day raise and other boys \$1. The agreement was entered into by the operators only on condition that coal prices will be raised by the Government to meet the increase.

By official decree the fuel administration on Oct. 10 raised the embargo on coal shipments to Canada. F. C. Baird, Commissioner of the Lake Erie Coal Exchange, has been selected by the fuel administration to apportion all the coal shipped from Lake Erie points to the Northwest and to Canada. The arrangement was made at a conference between Doctor Garfield and members of the fuel administration staff, and Judge McGee, state fuel administrator for Minnesota; Mr. Groverman, representing the dock interests in Lake Michigan and Lake Superior; Mr. McCue, assistant fuel controller of Canada, and Mr. Baird.

Harrisburg, Penn.

Officials of the United Mine Workers in the anthracite field are making every effort to obtain for the workers of the hard-coal district the same increases granted the men in the bituminous region of the western part of the state as the results of conferences held at Washington early in the week.

The district presidents of the hard-coal workers state that they will request the same proportionate advances as were given the soft-coal workers. They are not able at this time, however, to estimate the percentage of increase that will be requested, but it is believed to be from 25 to 40 per cent. The bituminous workers received an increase of \$1.40 on a daily wage scale of \$3.60.

John P. White, the international president, has called upon the anthracite district presidents to arrange a conference with the operators. He desires to have this conference at once, but no response has been received from the operators as to when the negotiations will be opened. These conferences will be held in Philadelphia, New York or Washington. There are reports that the anthracite operators will ask that the conference be held in Washington, so that Doctor Garfield, the fuel administrator, may participate.

In a message to Doctor Garfield on Oct. 2, the coal consumers of the lower anthracite region, through Hon. F. C. Reese, pointed out that the reduction of 60c. a ton on pea coal will be of little benefit to the consumer if the producers are permitted to draw for their supply the great quantities from the culm banks. He shows that the culm product is deficient in carbon and a great portion of it is slate and other refuse.

While the question of price still remains very much up in the air, so far as the consumer is concerned, and seems very far from being satisfactorily settled, that question, it seems, will fall short in importance of the question of supply in many communities within a short time unless the car situation takes a turn for the better. For it is said that many dealers are so loaded down with orders for coal they cannot supply that they care little about price, but do care most about their chances of getting a carload of coal.

Operators in the western part of the state say that the car supply in some territories is only 60 per cent. of demand with regard to coal. Delegations of operators have gone to the priority board and the car service board and have been promised relief which has not yet developed. This situation, naturally, also greatly affects the production of coal, for mines are not operated except when the coal can be loaded and moved.

A large number of plants of various kinds are closed for want of fuel and complaints of railroads confiscating coal in transit are more frequent. Shipments to the east and the seaboard apparently are moving somewhat better, but the Pennsylvania R.R. has a tight embargo on Western shipments, except those coming under the Government order covering shipments on the Lakes and to the Northwest. This has put all kinds of manufacturing plants in the Pittsburgh district in hard straits, and many may have to suspend.

Manufacturers say that no coal at the \$2 rate is obtainable. The answer always is that capacity for a long time forward is covered by contracts. The fixing of coke at \$6 per ton is encouraging to the coal operators. Ordinarily the ratio of coke and coal prices is three to two, so the new coke prices hold out hopes for an advance in coal, but they recognize that all proportions are lost at the present time.

In spite of the fact that operations cannot get out full production because of labor shortage and railroad deficiencies, a great number of new operations are coming into the business. Half of the charters granted in this state since Sept. 1 have been for coal companies, and most of these for bituminous, and in the last half of August 20 companies were chartered for soft-coal corporations.

Members of the board of appeals of the middle judicial district, which covers most

of the anthracite counties, have completed work on the exemption claims presented by the anthracite coal companies. About 20 per cent.—the same ratio that governed the board's consideration of the claim of the Delaware, Lackawanna & Western R.R. Coal Department—were exempted.

Members of the State Defense Commission and representatives of the Public Safety Committees of Pennsylvania spent two hours at the Capitol on Oct. 5 planning the joint work of the two bodies for the remainder of the year. At the request of the safety committee representatives, Col. Lewis Beitler, the commissioner authorized the governor to proceed with the appointments of volunteer police under the Sproul Act, and 445 men will be commissioned as volunteer policemen in several of the anthracite and bituminous coal-producing counties. It is said that they will probably relieve the Federal troops now guarding railroad property and coal mines.

Bituminous coal-mine inspectors are directed by the Department of Mines, in a letter issued recently, not to permit the great activities now going on in the soft-coal fields to be a cause of let-down in the safety precautions provided by law.

PENNSYLVANIA

Anthracite

Hazleton—Charles H. Kehoe & Co. have shut down their stripping operation in the Beaver Valley, owing to a dispute with the owners of the land over terms of the lease.

Coal companies of the Lehigh field are stocking up with timber, fearing a shortage in the supply as winter approaches, owing to the movement of troops over the railroads.

Preparations are being made to place a steam shovel at the Yorktown culm banks of the Lehigh Valley Coal Co., to load the once discarded fuel into cars for market.

The Harwood Coal Co. has placed in operation a second electrically propelled steam shovel at its colliery at Harwood.

The Lehigh Valley Coal Co. has started to dismantle the Tomhicken breaker, which has not been in use since the Coxie deal a decade ago. The coal mined from the Tomhicken is being sent to other operations, where it is prepared for market.

To move a reservoir and place it elsewhere, to mine the coal underlying it, is the plan of the Lehigh Valley Coal Co., whose subsidiary, the Wyoming Valley Water Supply Co. will rebuild the Tomhicken water plant.

Minooka—A mine cave occurred here recently within 10 ft. of the school building. Residents are demanding action to forestall the imperilling of the building and pupils by further caves.

Beaver Brook—To increase its coal output at its colliery, C. M. Dodson & Co. is reopening the old No. 2 slope, abandoned 35 years ago, but which has some unworked veins.

Wilkes-Barre—Orders for coal for four army cantonments have been received by the Lehigh Valley Coal Co., and the latter has notified the coal sales department that these orders shall be given preference over all other orders.

Edwardsville—A service flag with sixty stars was hoisted at the Woodward colliery of the Delaware, Lackawanna & Western R.R. Coal Department recently, indicating that 60 men of the 1800 employed there are serving Uncle Sam in the army and navy, all having enlisted within the last three months. The flag is 6 x 12 ft. This is the first colliery to hoist such a flag, as far as reported. It was bought by the foremen.

Lansford—The supply of cars is again short at the anthracite mines of this field, and production has been curtailed somewhat during the last week on this account. The railroad companies are using all rolling stock available to handle the increased production of the mines. Railroad crews are busy night and day to keep the breakers supplied with cars.

Scranton—The September grand jury in a special report recommended the indictment of officials of the Delaware, Lackawanna & Western Railroad Co. for "the wilful, careless and negligent manner" in which mining has been carried on under Luzerne St.

Bituminous

Johnstown—Two hundred miners at the mine of the Eastern Bituminous Coal Co., at Barnesboro, Cambria County, went on strike recently because James Berringer, the mine blacksmith, was exempted by the appellate draft board sitting at Greensburg.

WEST VIRGINIA

Charleston—Representatives of "wagon" mines in the Thacker field were in Washington recently to consult with the fuel administration in an effort to get an allowance for reaching railroads with their output.

Dana—The Polly Ann Coal Mining Co. is operating in the No. 2 gas seam near here. Frank Tannehill is the general manager.

Wheeling—President Jere Wheelwright, of the Consolidation Coal Co., announces that the company has subscribed to \$1,000,000 in Liberty Loan bonds.

The Clifford Coal Co. loaded the first coal for shipment recently. The company has the contract for furnishing 15 barges of coal to the United States Government at dam No. 15, below New Martinsville.

KENTUCKY

Whitesburg—A suit involving title to 200 acres of valuable Elkhorn coal lands is being fought in the Letcher Circuit court here between Nancy Webb and the heirs of the late John Adams and W. H. Potter and will be settled at the coming November term of court. The land lies in the vicinity of Mouth of Millstone above here and its development has been delayed due to the legal proceeding instituted some time ago. Much interest is manifested in the suit.

Hellier—The huge smokestack of the Edgewater Coal Co. near here collapsed during the past week, causing a delay in the operation of the mines. The smokestack is being rebuilt.

OHIO

St. Clairsville—Coal mines that for years have not loaded any of their product on the Ohio River are returning to the plan because of the car shortage. At Dilles a tipple has been erected so that barges may be loaded direct from the mine mouth.

Bellaire—Two hundred miners at the West Wheeling mine were laid off as the result of the Federal embargo against shipment of coal into Canada. The company has exclusive contracts with the Canadian Pacific Railroad.

Bellefontaine—A fuel famine exists here, not a pound of coal being for sale, although a pile of more than 100,000 tons is stored by the Big Four Ry. in its yards here. Efforts to purchase the coal from the railway company have proved unavailing, but Mayor Kennedy said that unless dealers receive a supply soon he expects to seize enough coal from the railroad company to relieve distress.

Canton—In an effort to conserve the gas supply, the East Ohio Gas Co. announced recently that the supply would be turned off in a dozen Canton factories Oct. 15. President Daly warned residents using gas for heating to provide themselves with a temporary supply of coal because of predicted gas shortage this winter.

ILLINOIS

Centralia—The Washhouse of the Marion County Coal Co., located at Junction City, burned to the ground recently. All the clothes of the miners who were at work were destroyed. The fire raged for 40 min. The origin is a mystery. The loss will reach \$25,000.

Foreign News

Calgary, Alberta—The coal mines districts are now producing approximately 15,000 tons of coal daily. This total includes the lignite as well as the bituminous and semi-anthracite properties, in fact all the coal area under the jurisdiction of Commissioner Armstrong.

Paris, France—The coal situation has taken on a brighter aspect since M. Loucher, the new coal minister, assured parliament energetic measures were being taken. The municipal authorities now announce there will be no shortage of coal if transport facilities can be improved. The monthly supply necessary for Paris is 100,000 tons.

Ottawa, Ont.—Doubt is expressed at the Geological Survey Branch of the Mines Department that important discoveries of anthracite have been made in the Salmon River district of Queen's County, New Brunswick. The presence of bituminous coal in that area has been known for some time, but the reported discovery of anthracite is questioned till further evidence is available.

Personals

W. E. Dayton, of Clarion, Penn., has been appointed superintendent of the Pennsy Coal Co., to succeed C. H. Haugh, resigned.

William C. Hood, of South Brownsville, Penn., has been appointed assistant general superintendent of the H. C. Frick Coal Co. Mr. Hood's headquarters will be Scottsdale.

Dr. John C. Howard, formerly of Middlesboro, Ky., and lately of Harlan, Ky., has been engaged by the Consolidated Coal and Coke Co. as resident physician for its new plant at Benham, Ky.

John Hammond, superintendent of mines of the Marion Center Coal Co. at Marion Center, Penn., has resigned to become superintendent for the Glenside Coal Co., near Hellwood, Pennsylvania.

Ole K. Olsen has been appointed sales agent of the Asbestos Protected Metal Co., of Pittsburgh, for the State of Louisiana and the southern portion of Mississippi. Mr. Olsen will be located at 822 Perdido St., New Orleans, La.

H. E. Good, mine foreman of Victor No. 29 mine of the Russell Coal Mining Co. at Clymer, Penn., has resigned and is succeeded by **Joseph Paydock**, formerly of the Jefferson and Clearfield Coal and Iron Co. at McIntyre, Pennsylvania.

E. N. Zern, lately head of the Department of Mining at the West Virginia University, is now associated with the Keystone Consolidated Publishing Co., of Pittsburgh, Penn., in the capacity of editor and mining engineer of the company's publications.

John J. Price, connected with the Madeira-Hill Coal Mining Co., Philipsburg, Penn., in the capacity of superintendent for the past 15 years, has resigned to go South to take charge of extensive soft coal mines. He is one of the best mine experts of this section.

Harry R. Hall, of Fairmont, W. Va., has been made acting superintendent at the Monongahela Valley Traction Co.'s Stafford mine. Mr. Hall has had considerable experience in mining engineering. For nine years he was with the engineering department of the Consolidation Coal Company, where he received a thorough training.

Charles Severn, of Indiana, Penn., general superintendent for the Emmons Brothers Coal Mining Co., has resigned to accept a similar position in charge of the construction and development work of the Koppers Co. operations in the Indian Creek Valley, Fayette County, near Connellsville, Penn. Mr. Severn will be located at Indian Head, Pennsylvania.

Marguerite Walker Jordan, of Fairmont, W. Va., head of the Employment Relationship Department for the Consolidation Coal Co. in West Virginia, Kentucky and Pennsylvania for about two years, has resigned her position. She will go on an extended trip to various sections of the United States, making a special study of the industrial social service work done by large corporations.

A. H. Wood, well known coal operator and mining engineer, of Chicago and Kentucky, has resigned the active management of the mines of the Bailey's Creek Coal Co., which have been under development since last April, near Kilday, Harlan County, Ky., and **G. M. Shoemaker**, an experienced engineer and operator, has assumed the management of the mines, which are expected to go into operation about Dec. 1.

Albert Van Blessing, former manager of the Sacandaga Coal Co., of Carbondale, Penn., was injured by German shell fire while serving with an ambulance unit on the French battle front. Blessing had his arm and right side punctured by a fragment of a shell. He is now receiving treatment at a base hospital somewhere in France. Mr. Blessing enlisted in an ambulance unit from this country and has been in France for several months.

Obituary

Anderson Wells, for 20 years a leading coal operator of Wise County, Virginia, is

dead at his home after a brief illness. He was well known to the coal trade throughout the country. A wife and four grown sons survive him. Two of the sons will succeed him in the coal business.

Herbert E. Goodman, vice president and general manager of the Goodman Manufacturing Co., died in Chicago on Oct. 3 at the age of 55 years. Mr. Goodman was well known to the coal mining industry through the development of the use of electricity in coal cutting and mine haulage.

Recent Coal & Coke Patents

Mining Method. T. De Roode, N. Y., 1,224,613, May 1, 1917. Filed Feb. 29, 1912. Serial No. 680,617.

Coal Cabinet. W. B. Armstrong, Sigourney, Ia., 1,224,590, May 1, 1917. Filed May 10, 1916. Serial No. 96,706.

Stoker. S. G. Greenwalt, Shawinigan Falls, Quebec, Can., 1,225,802, May 15, 1917. Filed June 1, 1916. Serial No. 101,018.

Coal Washing and Ore Concentration. T. M. Chance, Philadelphia, Penn., 1,224,138, May 1, 1917. Filed Oct. 2, 1915. Serial No. 53,761.

Mining Apparatus. T. De Roode, New York, N. Y., 1,226,065, May 15, 1917. Filed Feb. 28, 1912. Serial No. 680,618.

Set for Timbering Mines. H. M. Barber, Goldfield, Nev., 1,226,444, May 15, 1917. Filed May 1, 1916. Serial No. 94,606.

Coal Cutting Machine. W. M. Thomas, New York, N. Y., 1,226,412, May 15, 1917. Filed July 14, 1915. Serial No. 39,760.

Jigger for Separating Coal and Slate. H. J. Moyer, Philadelphia, Penn., 1,225,157, May 8, 1917. Filed July 14, 1915. Serial No. 39,916.

Publications Received

"Wood Mountain—Willowbunch Coal Area, Saskatchewan." By Bruce Rose. Canada Department of Mines, Geological Survey, Memoir 89. Illustrated, 103 pp., 6½x9½ in.

"Sandstone Quarrying in the United States." By Oliver Bowles. Department of the Interior, Bureau of Mines, Bulletin 124, Mineral Technology 17. Illustrated, 143 pp., 5½x9 in.

"The Wet Thiogen Process for Recovering Sulphur from Sulphur Dioxide in Smelter Gases." By A. E. Wells. Department of the Interior, Bureau of Mines, Bulletin 133. Illustrated, 66 pp., 5½x9 in.

"Abstracts of Current Decisions on Mines and Mining, Reported from September to December, 1916." By J. W. Thompson. Department of the Interior, Bureau of Mines, Bulletin 147, Law Serial 10. Unillustrated, 84 pp., 5½x9 in.

"Abstracts of Current Decisions on Mines and Mining, Reported from January to April, 1917." By J. W. Thompson. Department of the Interior, Bureau of Mines, Bulletin 152, Law Serial 11. Unillustrated, 79 pp., 5½x9 in.

"Extraction of Gasoline from Natural Gas by Absorption Methods." By George A. Burrell, P. M. Biddison and G. G. Oberfell. Department of the Interior, Bureau of Mines, Bulletin 120, Petroleum Technology 23. Illustrated, 71 pp., 5½x9 in.

"Limits of Complete Inflammability of Mixtures of Mine Gases and of Industrial Gases with Air." By George A. Burrell and Alfred W. Gaujer. Department of the Interior, Bureau of Mines, Technical paper 150. Unillustrated, 13 pp., 5½x9 in.

"The Production of Coal and Coke in Canada During the Calendar Year 1915." By John McLeish, B. A., Chief of the Division of Mineral Resources and Statistics, Canada Department of Mines, Mines Branch. Unillustrated, 42 pp., 6½x9½ in.

Trade Catalogs

Sanisep Sewerage Systems for Rural Homes, Villages, etc. Cement Products Co., Wilmington, N. C. Catalog. 6x9 in.; illustrated.

Sullivan Diamond Core Drills. Sullivan Machinery Co., 122 S. Michigan Ave., Chicago, Ill. Catalog No. 69. Pp. 66; 6 x 9 in.; illustrated.

Worthington Turbine Pumps. Worthington Pump and Machinery Corporation, 115 Broadway, New York. Bulletin W-602. Pp. 32; 6 x 9 in.; illustrated.

Single and Multistage Steam Turbines and Reduction Gears. Moore Steam Turbine Corporation, Wellsville, N. Y. Bulletin No. 3. Pp. 16; 6 x 9 in.; illustrated.

Jeffrey Stepped Multi-Bladed Fans for the Ventilation of Mines. The Jeffrey Manufacturing Co., 912 N. Fourth St., Columbus, Ohio. Catalog No. 229. Pp. 24; 6 x 9 in.; illustrated.

The Sterling System of Home Building. International Mill and Timber Co., Bay City, Mich. Catalog. Pp. 64; 7 1/2 x 10 in.; illustrated. This contains plans and specifications of different types of portable dwellings.

Wire Rope, Armored Rope, Fibreclad Rope, Cordage. Waterbury Co., 63 Park Row, New York. General Catalog and Price List. Pp. 220; 3 1/2 x 6 in.; illustrated. This is a very neat cloth-bound catalog covering the products of this concern.

Western Electric Electrical Supply Year Book. Western Electric Co., 195 Broadway, New York. Pp. 1160; 7 x 10 in.; illustrated. This follows the plan of uniform list prices and basic discount in augmented by this company three years ago, and in addition manufacturers' list prices are shown on certain standard lines.

Industrial News

Pittsburgh, Penn.—The United States Government has placed an order with the Mine Safety Appliance Co., of Pittsburgh, Penn., for 200 sets of mine rescue apparatus for use in France and Belgium.

Springfield, Ill.—The Illinois Public Utilities Commission is expected to hand down a decision in a few days on the application of the steam lines of the state to increase freight rates on coal and coke 15 cents a ton. Arguments were heard some time ago.

East St. Louis, Ill.—The Excelsior Tool and Machine Co., East St. Louis, Ill., will in the near future place on the market a ring pulverizer for grinding and pulverizing coal, limestone and other hard substances to any desired mesh.

New York, N. Y.—The Birds Run Coal Co. has been incorporated in Delaware with a capital of \$500,000 to operate coal mines. C. A. Bates, F. E. Babbridge and F. A. Goddard, all of New York, are the incorporators.

Waynesburg, Penn.—The Cumberland Coal Co. has been incorporated in Delaware with a capital of \$20,000 to mine for coal. The incorporators are: W. W. and R. J. Waychoff and T. H. Shannen, all of Waynesburg.

Denver, Colo.—The municipal coal department in the first two weeks' operation has sold more than 2500 tons of coal. While the second week shows less orders received at the city hall office, this decrease is met by an increase of orders at the three branch offices at the yards.

Charleston, W. Va.—The Gauley Coal Sales Co. has been incorporated with a capital of \$50,000 to operate coal mines in Fayette County. The incorporators are: R. C. and U. G. Thomas, and T. A. Dietz, Charleston; C. W. Dillon, Fayetteville, and N. M. Cavendish, Gauley Bridge.

Livingstone, Mont.—The Pine Creek Coal Co. is planning extensive development work on three coal veins in the Coal Pit district now that a road which will tap the section is being completed. Officers of the company are: G. H. Bottamy, general manager, and G. H. Brown, general sales agent.

Oklahoma City, Okla.—The Mineral Belt Coal Mining Co. has been organized at Oklahoma City with a capital of \$50,000, for the purpose of developing coal land leases in the coal belt of Oklahoma. The incorporators are: C. F. Prouty, N. E. Cole and V. E. McInnis, all of Oklahoma City.

Wewoka, Okla.—The Keno Coal Mining Co. has been organized at Wewoka, Okla., and charter has been filed in the office of Secretary of State Lyon at Oklahoma City. The company is capitalized at \$50,000, and the incorporators are: J. P. Stringfield, D. G. Hart and R. W. Parmenter, all of Wewoka.

Shawnee, Okla.—The Finicum Coal Mining Co. has been organized at Shawnee, Okla., and charter has been filed in the office of Secretary of State Lyon at Oklahoma City. The company is capitalized at \$100,000 and the incorporators are: W. T. Finicum, Phil Watson and J. M. Byrum, all of Shawnee.

Madisonville, Ky.—The Grapevine Coal Co., with capital stock of \$30,000, has been incorporated here by R. E. Cooper, Hopkinsville, Ky., and F. C. Wake, C. H. Murphey and W. S. Elgin, of Madisonville. The company has several hundred acres of coal lands and has let a contract for sinking a shaft.

St. Louis, Mo.—People living in the vicinity of Gustine and McDonald Aves. are digging their own coal. They are taking coal from a vein near the surface which was formerly mined by a manufacturing concern, but which has been abandoned for some time. The coal is of poor quality, but will burn and give heat.

New York, N. Y.—H. Boker & Co., Inc., Electrical Department, 101-103 Duane St., have prepared a small table showing the cost per hour of current consumed at any rate from 1c. up to 10c. per hour and for any wattage consumed from 1 watt up. The company will forward a copy gratis to any reader interested upon request.

Clatsop, Wash.—The Northwestern Improvement Co. expects to produce a thousand tons more coal next year than this as a result of the opening of No. 8 mine, upon which work has just been started, the extension of mine No. 3 and new work in No. 7. New tipples are being installed in mines Nos. 6 and 8.

Seward, Alaska.—The Government has already taken out 664 tons of coal from its Eskia Creek coal mine and the Land and Industrial Department of the Government road states that Lars Netland, lessee of Units 10 and 11 of the Matanuska coal fields, has started development on the 1400 acres which are embraced in these units.

Milwaukee, Wis.—Despite the fact that shipments of coal to Milwaukee have been reported to be insufficient and that reports say there is a scarcity of the fuel throughout the city, figures for September show that approximately 30,000 tons more were shipped into Milwaukee during the past month than during the same month last year.

Cincinnati, Ohio.—A shipment of approximately 40,000 tons of coal is reported on its way down the Ohio on one of the artificial rises secured through the operation of the system of Government dams on the river, all of this shipment being consigned to Cincinnati. The coal on the several tows coming down is about equal to that in 800 railroad cars of 50 tons each.

Vinita, Okla.—The Craig County Coal Co. has been organized at Vinita and charter has been filed in the office of the Secretary of State Lyon at Oklahoma City. The company is capitalized at \$250,000 and the incorporators are: W. D. Ecstein, W. H. Klaus and W. O. Dillon, all of Vinita. The company will develop a large acreage of coal leases in Craig County.

Huntington, W. Va.—Chesapeake & Ohio's coal loadings for September reached 2,346,365 tons, an increase of 73,195 tons over September, 1916. The September tonnage is considered remarkable, as there were five Sundays and a number of holidays, observed by foreign workers. Difficulties were also added by the heavy movement of drafted men to cantonments.

Youngstown, Ohio.—The Youngstown Chamber of Commerce is preparing to purchase 6000 tons of coal from the mines at Grove City, to be sold to the public from the cars at about \$4.75 a ton, purchasers to furnish their own delivery facilities. This measure was decided upon as a means of averting some degree of distress on account of the inability of retailers to meet the demand.

Louisville, Ky.—A serious shortage of coal for steam and domestic uses is reported from all parts of the state, as well as in adjoining states, even in the western field, where numbers of the utility plants, especially gas making corporations, are dependent on the eastern Kentucky coals. It is hoped that the resumption of work in the southeastern Kentucky-Tennessee field will relieve this situation.

Middleport, Ohio.—Coal at cost price is the object of a cooperative coal company being organized by citizens of Ohio River cities between Portsmouth and Louisville, Ky. Captain John Lyons, a wealthy resident of Middleport, Ohio, is the leader of the movement. Agents are obtaining subscriptions. The company plans to pay the Government price for the coal and then sell it to consumers, who will be the stockholders, at cost.

Pittsburgh, Penn.—The Willsay Coal Co., with offices in Pittsburgh, has recently been formed and promises to become a factor in the local trade. Willard G. Say, formerly general sales agent of the Great Lakes Coal Co., is president and general manager, and associated with him is Richard L.

Smith, consulting engineer and geologist. The new company is engaged in mining as well as in the distribution of coal in the principal markets.

Chicago, Ill.—The Link-Belt Co., with factories in Chicago, Philadelphia and Indianapolis, and sales offices in the principal cities of the country, announces its ability to again furnish Link-Belt monorail hoists for quick shipment. The lifting capacities of these hoists range from 1000 to 6000 lb. The hoists can be adapted for either direct or alternating current and fitted with plain, hand-gear, cord-operated motor, or a cage-operated motor trolley.

Columbus, Ohio.—With the running of the C. & O. freight trains into Columbus during the last few days, there has been a great increase in the coal tonnage handled locally. The first train which rolled into this city over the new line consisted of fifty 70-ton coal cars, and the weight of the train back of the engine was 5300 tons. This unusually heavy load was handled easily by the Mallet engine, of which the road has several of the largest type.

Buckley, Wash.—The state supreme court has granted a temporary restraining order to the Northwestern Improvement Co. to prevent the Kittitas County commissioners from making a cruise of its coal lands for the purpose of equalizing the coal lands and as a result this work will be postponed until next year. The county had contemplated increasing the value of coal lands \$1,600,000 over the values of last year which would be added to the amount of taxable land in the district.

Fairmont, W. Va.—At a meeting of the Central West Virginia Coal Operators' Association held on Oct. 5, the largest in the history of the organization, data were submitted by representatives of companies, members of the Association, covering the cost of producing coal in the section of West Virginia where these companies operate. The information thus secured has been forwarded to Fuel Administrator Garfield, at Washington, to assist him in determining fair prices for coal at the mines.

Memphis, Tenn.—An ordinance is being drafted by order of Mayor H. H. Litty, which will require the retail coal dealers of that city to sell coal by the ton of 2000 lb. instead of in 1800-lb. lots. The practice has been an outgrowth of the custom in Memphis of selling retail coal by the barrel, 10 barrels making a load of 1800 lb. There are no complaints of coal dealers selling 10 barrels as full tons, but the purpose of the city officials is to remove the possibility of some dealers doing so.

Toledo, Ohio.—Loadings at the docks of the various railroads entering Toledo have been unusually active during the week ended Oct. 5. The Toledo & Ohio Central R.R. loaded 99,000 tons during the week as compared with 63,000 tons the previous week. The total handled by these docks since the opening of navigation is 1,685,699 tons. The Hocking Valley loaded 201,000 tons, as compared with 184,000 tons the previous week. The total loaded by these docks for the present season is 3,540,761 tons.

Indian Head, Penn.—The large tract of coal along the Indian Creek R.R., recently acquired by the Mellon-Zimmerman interests will be developed by a subsidiary of the Koppers Co. The entire output will go to a coke plant now being erected in the East by the company. Fifteen mines will be opened, and three of these are under development at the present time. A large mining town will be built near the center of the property and the Indian Creek R.R. extended to meet the demands of the new company.

Louisville, Ky.—Complaints against coal freight rates on the Louisville & Nashville and on the Illinois Central will be considered at sittings of the Kentucky Railroad Commission, which will be held in Louisville on Oct. 29 and Oct. 31 respectively. These complaints involve recently promulgated increases ranging up to 15 per cent. of the old rates. The Ohio Valley Coal Operators' Association, Owensboro citizens and others are complainants. Under the law the Kentucky commission has jurisdiction only over rates on one line and may not interfere with joint rates.

Hillsboro, Ill.—Eleven suits have been filed in the Circuit Court here against the Peabody Coal Co., owner of the old Paisley mine at Witt, for damages aggregating \$9600, on account of sinking of the surface above the mine, alleged to be due to the removal of props. A suit involving the same question against the Burnwell Coal Co., former owners of the mine, was tried at the April term of court, but the jury disagreed. Evidence in that case was that the props were in place when the mine was turned over to the Peabody company and that they were afterward removed.

Market Department

GENERAL REVIEW

Anthracite moving as rapidly as production and car will permit, but not fast enough to satisfy demands. General shortage of bituminous except in Northwest. Stocks generally low and some plants have closed down.

Anthracite—There would appear to be no serious reduction in the amount of anthracite produced and sent to the market. The consumption of this kind of coal is, however, abnormally heavy, probably on account of the scarcity of bituminous. Some wholesale dealers are refusing further orders for domestic coal on account of its scarcity. The steam grades are also scarce and hard to secure. Heavy Government shipments of anthracite have also been made recently and rumors are afloat that the Government requirements will increase. This will, of course, result in a further scarcity of the domestic sizes. There appears to be generally a tremendous demand for fuel and the production of the mines has thus far been insufficient to meet this demand.

Bituminous—Everywhere except in the Northwest there appears to be a marked scarcity of bituminous coal. For weeks appeals for fuel have been pouring into Washington with no adequate relief from the situation. A general scarcity of miners, a shortage of cars, an abnormal industrial demand and various labor troubles throughout different parts of the country have contributed to this condition. The manufacturing towns of Ohio, Indiana and southern Michigan appear to be in particular need of fuel. Many municipal and industrial plants throughout this region, in the smaller towns particularly, have been obliged to shut down on account of fuel scarcity. This is true alike of districts almost within the coal-producing region as well as those lying remote from the mines. The prices at the mines are, of course, in accordance with the Government schedule, but no coal is to be had, or practically none. A few sales have been reported on the \$2 basis and a few contracts have been closed at that figure, but the great volume of the tonnage still moves upon contract, and spot coal in the open market has disappeared. The resumption of work in the eastern Kentucky-Tennessee field after a shutdown of a few weeks because of a strike in that region has been the cause of considerable rejoicing among coal dealers and consumers, and will possibly relieve somewhat the tensity of the situation in southern Ohio. The priority order as it affects shipments of coal to the Northwest has also been a potent factor in the coal shortage of other central regions. It is believed that with the closing of navigation the considerable volume of Lake coal, which has assumed record proportions during the recent past, will be diverted to local consumers, relieving their strenuous needs.

Middle Western—The retailers throughout the upper Mississippi Valley have started work on the new prices as prescribed by the Government. The demand throughout this region is as intense as in the midwinter season and the supply here as elsewhere is inadequate. The conditions throughout this region have reached an acute stage. Shippers of coal are fairly swamped with orders, many of which they are unable to fill. But little smokeless and other Eastern coals are finding their way into this territory, and the majority of the needs of this district are being taken care of by Illinois and Indiana producers. The scarcity of coal has forced the substitution of Illinois bituminous for the Pocahontas and other Eastern coals which formerly were here consumed in considerable quantities. Practically all mines throughout this district are sold up for some weeks to come.

Lake Trade—The volume of coal moving via Lake to the Northwest has reached record proportions throughout the past week. Shipments have thus been extremely heavy and but little delay has been experienced in getting cargoes at the various loading piers.

A Year Ago—Efforts to increase anthracite production meet with small success. Bituminous markets show the erratic features incident to abnormal conditions. Insistent demands for Pittsburgh district coals in the Eastern market. Flurries of excited buying in the Middle West.

COAL PRODUCTION

Troop movements, congesting traffic and disturbing the labor force at the mines, appear to be responsible for the sudden drop in coal production during the week ended Sept. 22. The ratio of tonnage produced to full-time capacity, for all mines reporting since the weekly statistics were undertaken, fell from 72.3 per cent. in the week of Sept. 15 to 69.7 per cent., the lowest level recorded since August. All districts shown in the accompanying table registered decreases except Alabama and the Winding Gulf region of West Virginia. The decrease was small in Illinois and western Pennsylvania and most marked in Indiana, Ohio and the Southwest. The strike deadlock in eastern Kentucky and Tennessee remained unbroken. In the last six weeks these strikes have cost the country more than 1,000,000 tons of bituminous coal from those mines alone that regularly report to the Geological Survey.

PERCENTAGE OF PRESENT FULL-TIME OUTPUT PRODUCED IN WEEK ENDED

State	Aug. 25	Sept. 1	Sept. 8	Sept. 15	Sept. 22
Iowa.....	86.3	81.4	79.4	89.7	81.1
Illinois.....	69.3	76.0	76.5	71.5	71.4
Indiana.....	69.3	72.9	74.9	70.8	65.6
Ohio.....	68.6	68.6	80.6	75.1	68.5
Western Pa.....	75.2	76.9	81.9	83.5	82.9
Winding Gulf region					
West Virginia.....	88.7	87.8	74.7	86.0	94.4
Southwestern Va.....	94.1	91.7	96.0	96.3	93.8
Eastern Kentucky and Tennessee.....	4.7	10.8	10.8	10.8	10.2
Alabama.....	96.1	83.6	82.2	85.4	92.9
Kansas and Missouri.....	76.2	79.4	79.2	83.9	66.9
Okl. and Arkansas.....	70.0	63.0	72.1	72.2	64.2

Total reporting from beginning... 68.5 72.0 74.8 72.3 69.7

From the rail shipments it will be seen that the depression of the week ended September 22 gave place to a period of unusual activity, the best week since July 28 as measured by rail shipments. The total shipments of 114 roads amounted to 192,720 cars in the week of September 29, an increase of 5.6 per cent. over the figure for the preceding week. The increase was greatest in Illinois, Indiana, and western Kentucky. All districts reporting, however, recorded substantial gains over the preceding week.

CARLOADS OF COAL ORIGINATING ON PRINCIPAL COAL-CARRYING ROADS

District	Sept. 8	Sept. 15	Sept. 22	Sept. 29
Ala., E. Ky. and E. Tenn.....	5,471	5,792	5,163*	5,632
Ill., Ind., and West. Ky.....	19,459	22,749	21,424*	23,655
Pa., and Ohio.....	42,244	48,723	46,301*	48,868
W. Va. and Va. Smokeless.....	11,856	13,879	13,226	14,055
High volatile... West of the Mississippi.....	18,678	18,490	18,046*	18,832
Total.....	99,372	111,686	106,191*	113,130†
Cars loaded by 114 roads, including those above.....	165,717	190,867	183,090*	192,720†

* Revised from last report. † Preliminary figure, subject to revision.

BUSINESS OPINIONS

The Iron Age—With the leading iron and steel makers in conference at this writing with the War Industries Board, a further announcement of agreed prices may be expected at any moment. The effort will be to settle on the upward of one hundred items, products and classifications of them, but the American Iron and Steel Institute's committee prior to leaving for Washington had not gotten far beyond a consideration of semi-finished steel products. What will interest the trade nearly as much as prices is the extent to which there will be a realignment of basing points and other changes in trade practices. The sweeping recommendations proposed in fixing pig-iron prices at the same figure for all furnaces are conspicuously epochal. Whether finished steel will be quoted at equal figures for Chicago as well as Pittsburgh is

a question; it was not, it appears, discussed at the meetings in Washington out of which came the price promulgation on Sept. 24. The effort will be made to secure a special base price for shell steel, on the ground that it introduces a very different steel-mill problem from the rolling of ordinary steel rounds. The place of the jobber in the price-fixing program and the status of export sales for commercial use, or under classification C, may bring out definite rulings.

Dun—Progress toward better business has been unmistakable in some important branches which recently experienced halting, and more optimistic views of the general situation are possible. With the gain in actual transactions, which in some lines has been conspicuous, there has come an increase in the working force at plants which had been running less actively, or not at all, and further price recoveries are witnessed in certain quarters where there had been rather sharp yielding.

Bradstreet—While trade is large, industry active and crop returns good, conservatism seems to be more sharply outlined, the matter of present price levels or possible readjustments superinducing greater caution in making future commitments. In other words, there is a growing disposition to buy more in consonance with nearby needs, to guard against possible downward revisions in prices, to take account of the effects of taxes, and to measure the results of a large part of the populace shifting from peaceful pursuits to those of war.

Marshall Field & Co.—Current wholesale shipments of dry goods for the week are running stronger than in the corresponding period of last year. Road sales for immediate delivery equal the very heavy volume of a year ago, while road sales for future delivery are slightly smaller. Fewer customers have been in the market during the week. Collections are in excess of the same period of 1916. The cotton market is strong and advancing.

Atlantic Seaboard

NEW YORK

Some wholesale dealers are refusing orders for domestic coals, owing to its scarcity here. Middlemen suffering most. No change made so far in retail prices. Everybody waiting for appointment of local Fuel Administrator. Buckwheat coal scarce. Bituminous spot-coal market serious and no business being done. Labor leaving the mine regions because of lack of work. Car supply bad.

Anthracite—It has been a long time since the domestic coals were so scarce in this market as they are now. The companies which ordinarily are well able to take care of their regular trade are themselves short of supplies and retail dealers who usually get nearly their entire supply from one or other of the big producers are circulating among the wholesalers in lower Broadway imploring for help. One buyer early this week said he had called at twenty offices and had received a negative reply in each one when he asked for coal. Some dealers are refusing to book orders until their books are clear of those already entered. They say they cannot tell when they will be able to secure the coal needed. The lack of domestic coals is working a hardship on many middlemen, some of whom have been in business for many years but who since the publication of President Wilson's order in August have not been able to get sufficient coal to take care of their regular trade. Business with most of these is almost suspended, except in the steam sizes, and because of their failure to secure the larger sizes there is danger of the customers going elsewhere for supplies.

Not much comment was heard regarding the rules and regulations announced by Doctor Garfield on Monday of this week, but there was a favorable opinion expressed by those who had read them over.

Receipts at this Tidewater point are not sufficient to take care of the demand and most wholesale dealers have plenty

of orders booked to keep them busy for several weeks, even though supplies increase.

Retail dealers are waiting for a further announcement or an explanation of last week's order regarding prices. Consideration has been given the order, but no change has as yet been made in local prices. It is the opinion of those who ought to know that there will not be much change. The trade is much interested in the man whom Doctor Garfield will select as fuel administrator for New York City. It is hoped that he will be conversant with trade conditions.

Chestnut coal which has been in larger supply than either egg or stove is tighter and not now being forced upon buyers. A coal is scarce with mines quoting the new Government price.

Barley is the only one of the small sizes to be had in quantity. It is moving freely and some dealers are over-loaded. Buckwheat No. 1 and Rice are scarce.

Current quotations, per gross ton, f.o.b. Tidewater, at the lower ports are as follows:

	Circular	Individual
Broken.....	\$5.95	\$6.70
Egg.....	5.85	6.60
Stove.....	6.10	6.85
Chestnut.....	6.20	6.95
Pea.....	4.70	5.45
Buck.....	3.95@4.65	5.20@5.45
Rice.....	3.40@3.60	3.90@4.35
Barley.....	2.90@3.15	2.40@2.55
Boiler.....	3.15@3.30	

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—The situation continues serious, with no word from Washington as to any contemplated revision of prices. No reports are heard as to purchases of \$2 coal and receipts at this market are about as low as they could be. Contract coal is moving slowly while spot coal is practically out of the market. Large consumers who in some instances, have good-sized stocks on hand, are beginning to worry as to future supplies and are endeavoring to add to their reserves.

Conditions in several nearby industrial plants are acute and unless there is a decided change within the next week or two it is probable there will be some suspensions.

There is some disappointment over the failure of the Federal authorities to take some action regarding prices on coals coming to this market. However, this is looked for as soon as conditions in the Central Competitive field are adjusted.

The labor situation is causing much worry to the operators. With better working conditions in the coke fields, the men are steadily leaving for new scenes and unless something is soon done the operators fear they will be greatly handicapped in producing coal.

The rules and regulations issued on Monday last are favorably looked upon by the local trade. They settled several questions which had concerned the dealers.

The shipping situation is serious. Delays are numerous and some vessels have been compelled to go to other ports to fill their bunkers.

PHILADELPHIA

Anthracite shipments light. Retailers slow to reduce prices. State Fuel Commissioner appointed. Heavy Government shipments, with rumors of increases. All sizes short in retail yards. Steam coals all growing stronger. Bituminous conditions still unfavorable. Wage increase granted miners will probably bring increased prices. Extraordinary demand for coal, but supply not equal to it.

Anthracite—So far this month the shipments of coal have not increased, but additional trouble has been brought to the already harassed dealer. The instructions from Washington demanding a regulation of prices to the consumer have been the chief topic of conversation. At this writing no reductions have been made except on pea coal. At first there were but a few dealers who announced the change, but by the end of the week it was a fairly well established fact that the entire trade would at least deduct 60c. per ton from this size when the operators reduced their selling price to them to that extent.

Pea is now costing the retailers \$3.40 at the mines when purchased from the companies, \$4.15 from the individual operators and \$4.25 when it comes through a broker. The Retail Coal Exchange held a lengthy meeting on Wednesday last, but the only news given out thus far was that the retailers of the city would obey the Government order. It is also understood that they had an attorney present to advise

them in their action, and another meeting will be held this week.

In the meantime Commissioner Garfield has appointed William Potter, former minister to Italy and now resident in this city, State Fuel Commissioner, and it is the intention to have a committee of the exchange confer with Mr. Potter at once. So far the state commissioner has made no announcement except to say that he was spending the first days in familiarizing himself with the situation and expected to appoint as members of his commission a man identified with the coal trade and the third person is to be some prominent business man. He will also appoint local committees for every considerable community in the state.

The principal grievance of the retailers at this time seems to be the margin of 75c. allowed the independent operators, and there are sure to be some strong protests against this ruling. It has never been satisfactorily explained why the smaller operators are allowed this difference, and the trade of the smaller shippers is far better cared for than that of the big companies. While the big fellows are making car shortage an excuse for poor shipments the independents seem to be faring fairly well, and even the brokers with a 95c. margin over the company prices seem able to procure quite a little coal for their trade.

It is stated that about 80 per cent. of the coal for Government use is being supplied by the companies. This latter business is increasing to an alarming extent, and it is now learned that an immense tonnage of broken coal is about to be called for. If the tonnage involved is as great as now spoken of, it will be the cause of compelling the shippers to ignore present contracts now held with gas companies, furnaces, manufacturers, etc. In that event the industrial plants would naturally turn to egg, which would practically deplete the already short domestic market.

While there are no considerable stocks of coal in any of the dealers' yards, there are at least a half dozen exceptions, retailers who by strenuous efforts all through the summer have accumulated stocks of pea coal ranging from 1000 to 2000 tons, which cost them well on to an average of \$5 at the mines. They are now much disturbed to know whether they will be compelled to sell this accumulation at the retail price fixed by the Government. If this is found to be true, these dealers are bound to suffer a severe loss for their foresight in trying to secure coal for the public.

The shipping companies in addition to their regular rush of business have been busy all week in preparing new data for the Government. This time it consists of a copy of every contract which was still effective as of Sept. 1, 1917. Upon these must be noted all shipments that have been made and various other information which has kept everybody on the jump to prepare.

The demand for all sizes continues and unless increased shipments are received this month the situation locally may soon be actually serious. Dealers report that consumers who delayed ordering their coal are now in the market and this should stimulate buying. They claim that unless they can stock some coal this month their case is hopeless, and that by November in normal years the ordinary demand, or transient business, is sufficient to tax their equipment. This year, with the labor question in doubt and the coal supply still more so, they face the winter with much apprehension.

All the dealers in one of the city's suburbs have recently complied with the demand of their drivers and will close their yards at noon on Saturday the year around. This shows how the dealers are at the mercy of labor. This condition will likely spread throughout the city, but is not as much dreaded as a demand for higher wages which some are expecting with the first cold weather.

To compare the proportionate demand for the different sizes seems almost useless, as the retailers will take anything consigned to them. Egg is particularly short in the outlying sections of the city. Stove continues apparently hopeless and most dealers have none of it. Chestnut, too, is rapidly disappearing from yards that had a fair stock a month ago. Every dealer is begging for pea, not that the immediate demand is so great, but with the reduced prices in sight and cold weather coming, there appears to be no possibility of supplying the calls that are sure to come.

The steam sizes show continued activity. Buckwheat is scarce and there is a ready market at \$4. In fact, some of the largest companies reported that they were short on this size for their contract trade. Deal-

ers with small trade for this size are becoming anxious, as they find the shippers do not take their business on this size seriously. Rice at from \$2.85 to \$3 shows the condition of the market, as does barley at \$2 and culm at \$1. Sales of this latter grade have been made as high as \$1.15.

The embargo on P. & R. cars to the B. & O. R.R. and also to the Western Maryland continues. Once again the Lehigh Valley R.R. has embargoed all points south of Phillipsburg, N. J., and this has caused much suffering on the part of the Pennsylvania R.R. dealers, who are now practically out of business until the embargo is cancelled.

The prices per gross ton, f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for Tide, are as follows:

	Li e Tide	Line Tide
Broken.....	\$4.55 \$5.70	Buck..... \$2.90 3.30
Egg.....	4.45 5.75	Rice..... 2.40 3.40
Stove.....	4.70 6.00	Boiler..... 2.20 3.30
Nu.....	4.80 6.05	Barley..... 1.90 2.15
Pea.....	3.40 4.30	

Bituminous—Unfavorable conditions continue in the bituminous trade, although it would appear that some progress had been made in the direction of an upward revision of the \$2 price order. This has been due largely to the agreement reached by the representatives of the operators at Washington granting a new wage scale to the miners of the central district. It is believed that this will meet with the approval of the Fuel Administrator and at the same time allow of a change in price which will assure a fair margin of profit. It is estimated that the wage increase alone will increase the price of coal at the mine from 35c. to 50c. per ton.

The quantity of coal received here continues to be far less than the demand. We have heard of late of an occasional car being sold at the \$2 price plus commission, but practically all coal mined is going on contracts. It is true that contracts are expiring every now and then and, of course, not being renewed, but even the tonnage set free in this way does not reach a spot market, as it is necessary to turn it over to other contracts that are short.

It is reported that heavy shipments of coal are being made to the Northwest, as it is the intention of the authorities to get as much coal into that territory as possible before freezing weather arrives. So far the modification of shipments to Canada has had no appreciable effect on the local trade.

Inquiries for coal for urgent need continue to flood the shipping offices and personal calls are quite common, wherein the statement is made that plants will be closed down unless coal is to be had at once, but under present conditions where a man does not have a contract his chances of getting coal are slim. A number of appeals have been made lately direct to the fuel administrator at Washington and while this has not often resulted in coal being received, it does serve the useful purpose of acquainting the authorities with the true conditions of trade.

Coal of late has also been growing quite scarce at the piers, causing delays to the movement of vessels on account of a lack of bunker fuel.

Taken altogether, while the operators still claim to possess a hopeful outlook for the future, yet there are many signs of weariness due to their having been placed on the defensive so long.

BALTIMORE

Jobbers here organize as matter of protection. Wholesalers and operators in uncertain state. Hard coal men figure there will be no reduction.

Bituminous—The uncertainty of the bituminous situation here has not been relieved to any extent. The trade is still figuring on the possible effect of what miners' increases and granted increases in government maximum selling prices will have on the business. Most of them fail to see any possibility of great incentive to production under present plans. Jobbers are feeling the squeeze of government regulation to such an extent that they say that they will be forced out of business unless some change is made.

Following a visit here from E. M. Platt, of Chicago, head of the National Coal Jobbers' Association, a Maryland Coal Jobbers' Association was formed to fight for the rights of the middlemen. Howard Adams, of the S. M. Hamilton Coal Co., has been selected as president of this organization. Meanwhile, coal supplies here grow shorter each day. There has been little coal at tide, and all-rail arrivals have been insufficient to keep even urgent contracts going properly. Several industries have been aided with coal upon request to operating interests by the Fuel Administration in

Washington. Some had appealed on the ground that they held government contracts and were threatened with closing. Real cold weather will catch many places practically out of all fuel.

Anthracite—The hard coal men are still figuring how they will make out. Few can calculate, from facts made known at recent meetings of the coal men here, how a cut can come to the October prices under which the trade is working. As a matter of fact, if the announced basis is adhered to by the local administrator, prices would go up about 15 cents a ton. About 30 cents would probably come off the prices for pea coal. While receipts here the past week were a little better, every company is far behind on deliveries. Many homes and numerous institutions here are practically without coal.

HAMPTON ROADS

Shortage at all terminals. Delay in movement from mines. Poor dispatch on account of congestion. Few sales at fixed prices.

The shortage of stocks at all of the Hampton Roads terminals has become acute and practically all shippers are short of coal. The Navy Department is taking a large amount of coal and its requirements are so heavy that at times a large portion of the available coal on the terminals is requisitioned. The Tidewater movement of the railways is far from satisfactory, the Norfolk & Western particularly being in bad shape. Congestion of vessels at the piers is getting worse and dispatch is now most uncertain. Delay in securing export licenses is playing its part in the general mixup and delay.

Some few sales have been reported at the Government price, but this condition is not general, probably on account of the majority of shippers not having any free coal. Local dealers are awaiting the promised visit of a representative of the fuel controller before trying to establish any retail prices.

During the month of September almost every shipper at Hampton Roads was charged with demurrage on Tidewater coal. The pool was also heavily assessed. This was the first full month under the new demurrage tariff and from the fact that all shippers were charged demurrage it is evident that not enough free time is allowed. Claims from steamship owners for demurrage are added to the other burdens of the coal man. The whole trade is more or less demoralized and disgusted.

There are no quotations obtainable for prompt business.

Dumpings for the week ending Oct. 6 were.

Norfolk & Western Railway.....	137,473 gross tons
Virginian Railway.....	90,825 gross tons
Chesapeake & Ohio Railway....	72,027 gross tons
Total.....	300,325 gross tons

It is reported that the Shipping Board has already taken over the entire fleet of barges and tugs of one large concern engaged in the coastwise coal trade. Much interest is, of course, felt in regard to further action to be taken by the Government. It is now possible for any vessels engaged in the coal trade from Hampton Roads to New England to pass through the Hampton Roads defense nets at any time, day or night. By this concession it is evident that the importance of getting coal to New England is realized by the Government.

Lake Markets

PITTSBURGH

New sales regulations relieve some uncertainties. Sales light. Consumers indifferent supplied.

The 21 regulations of the fuel administration published at the beginning of the week for the sale and distribution of coal have been studied carefully by the trade and are expected to clear up a number of matters that have been in doubt and have impeded the transaction of business. On the whole the regulations are considered fair. Jobbers point out that they stand to lose some money on one of the regulations, which provides that coal bought, and not sold, by jobbers prior to the price fixing cannot be sold at higher than the fixed price plus commission.

Coal has been somewhat scarcer. One of the large steel interests at Youngstown has had several finishing departments idle this week from lack of coal. Others have made drafts upon their stock piles. Relief is expected when the Lake season closes.

The volume of business done in the open market is very limited, but is increasing

slightly. There would be more were it not that the revised coal prices are expected to be announced shortly, at a level sufficiently higher than the \$2 basis to make it worth while for sellers to hold off. It is thought in the local trade that the delay in announcing the new prices is due entirely to difficulties in settling the wage advances to be allowed.

Shipments in the Lake trade are heavy and operators feel that the Northwest is going to be quite fully supplied with coal. Commercial consumers feel that the Northwest has been given proportionately too much consideration, and they have accordingly been making strong representations at Washington that their own necessities are being neglected. We continue to quote the market at \$1.75 for slack, \$2 for mine-run and \$2.25 for screened coal, plus 15c. in case the sale is made by a jobber.

BUFFALO

No change in bituminous situation. Consumers running short. Fear that some of them will be crippled. Anthracite scarce locally, but moving fast by Lake.

Bituminous—The trade is still waiting for the operators to produce some free coal at prices that jobbers are at liberty to use. Till they do, no jobber has any business except such as he has covered by contract, and in that case the lack of cars or the order to ship to the Lake has often reduced the available coal to a low amount. Some mines are discriminated against by the roads, with which they have no contracts and are getting little or no car service. As a result they are idle and the few men they have had are leaving.

At the same time there are big consumers, including cities and towns running out of coal and others are afraid that present resources will not last. Many representatives of such concerns, finding that letters and telegrams to Washington do not secure results, are making trips there, begging for relief. As a rule they get small satisfaction, if any, though they are generally assured that they will be taken care of.

It does not appear that the coal output is running down badly. It is going into special localities, as up the Lakes, so that all sections may be supplied for winter. The movement by Lake is so much more rapid than it can be made by all-rail that the authorities try to make use of the Lake fleet, while it is still active. That such a plan cuts into many other calculations can hardly be avoided. The following regulation figures are little used. Operators will not sell by them. They are for all varieties of bituminous per net ton, f.o.b. Buffalo:

	Slack	Lump
Pittsburgh.....	\$3.30	\$3.80
Bessemer.....	3.25	3.75
Allegheny Valley.....	3.15	3.65

Anthracite—The supply of hard coal is fair but the distribution is restricted. So much is going by Lake that the local consumer is getting next to none. Some of the city trestles are open only two days a week or thereabout and the supply often runs out before night. The theory is that the city consumers have much more coal in their cellars than is the average at this time of the year and that they can wait till the Lake season is at an end or nearly so before they get more than what is needed for emergencies.

The amount reported by the custom house as shipped for the week past was 160,000 net tons, which is about a record movement. Of this, 56,300 tons cleared for Milwaukee, 55,600 tons for Duluth and Superior, 40,000 tons for Chicago, 3900 tons for Manitowoc, 1800 tons for Hancock, 1000 tons for Kenosha and 800 tons for Sheboygan.

Freight rates are strong at \$1.25 to Kenosha, 75c. to Hancock, 65c. to Manitowoc, 69c. to Chicago, 50c. to Milwaukee and 45c. to Duluth.

Lake shipments for September were 576,900 tons and for the season 2,738,920 tons, as against 328,010 tons for September last season and 1,940,161 tons to Oct. 1. Shipments to Canadian ports last month before they were cut off were 52,300 tons, which are included in the above totals.

CLEVELAND

Local market in chaotic condition. Production seriously decreased by shortage of miners and poor car supplies. A few contracts closed at Government prices.

The local market has been in a decidedly chaotic condition the past week, due to the conflicting edicts issued by the Federal fuel administrator, the Ohio state fuel commission and Cleveland city officials. Doctor Garfield states that it is necessary that Lake shipments continue in large volume

so that the Northwest may receive its supplies before the close of navigation, while state and local officials are making statements that unless operators make better shipments to industrial and municipal plants they will take the "bull by the horns" and seize coal now being shipped by Lake.

On top of all this the production has been seriously curtailed, especially in the eastern Ohio district, due partly to the railroads' inability to furnish sufficient cars. The car supply for the Pittsburgh No. 8 district mines only averaged 55 per cent. for the week ending Oct. 6.

Contracts, totaling 62,500 tons of Pittsburgh No. 8 coal, were reported closed the past week at \$2.25 for 3; \$2 for mine-run and \$1.75 for slack, all per net ton, f.o.b. mine.

A statement issued by F. C. Baird, commissioner of the Lake Erie Bituminous Coal Exchange, shows the distribution of the coal forwarded from Lake Erie ports in month of September as follows:

	American Tons	Canadian Tons
To Lake Superior docks.....	2,323,067	609,758
To Sault Ste. Marie docks.....	80,233	187,921
To Lake Huron docks.....	17,328	148,234
To Lake Michigan docks.....	926,063	.....
To Lower River docks, Detroit and St. Clair.....	52,931	64,634
To Lake Ontario & St. Lawrence River.....	.....	182,947
To Lake Erie docks.....	14,310	1,940
Total.....	3,413,932	1,195,434
Grand total.....	.....	4,609,366

TOLEDO

All factories in northwestern Ohio report a serious shortage of steam coal to investigating committee. Public utilities in a large number of the small towns nearby have closed down, owing to shortage of fuel.

Out-of-town buyers are becoming more numerous here as the days continue, without any relief for coal users. In many cases buyers have offered the full retail price for coal plus the price of reloading and shipping to destination, so urgent is their need. Thousands of tons of coal are passing through here enroute for the Northwest, while factories in the city are sending appeals to state officials to relieve their distress.

Steam users asked the mayor of the city to appeal to the governor of the state for coal with which to continue the operations of their factories. In most cases the factory heads asserted it would be only a few days before they would be without a ton of coal in their bins. The governor arranged with the state coal clearing house at Columbus to dispatch a trainload of coal to Toledo at once to relieve the situation.

Wholesalers say the mines are working to capacity and are sending out all the coal possible with the limited amount of labor which exists. Old contracts are taking most of the coal mined, and the priority order for coal for the Northwest still stands. It is the opinion of the coal men that nothing big in the way of helping the steam user caught short of supplies can be done before the closing of the Lake season.

Many retail consumers have been unable up to the present time to secure a winter's supply of fuel, and with extreme cold weather approaching intense suffering is predicted. Mayors of some of the small towns in this vicinity have confiscated sufficient coal to cover the needs of the residents for the time being, and say they will continue should conditions warrant it.

The volume of coal leaving this port for the Upper Lakes continues to increase and every boat available is being pressed into Lake coal carrying service. In one day last week 20 vessels cleared the city laden with coal for the Northwest. This, Lake men say, is a record that has never before been equaled. Some of the largest coal cargoes ever carried by Lake freighters have been loaded at Toledo docks during the past week.

An effort was made to have the priority order for Lake shipments annulled, recently, by a committee of business men, who held that this section of the country was suffering from a fuel shortage while the Northwest was getting more than enough coal to carry it through the coming winter. This failed, however, and coal is still being rushed to the Northwest.

Prices per ton, f.o.b. mines, are as follows:

	Mine-Run	Lump and Egg	Nut and Slack
Hocking and Pomeroy..	\$2.00@2.35	\$2.25@2.60	\$1.75@2.10
Kentucky..	1.95@2.40	2.30@2.65	1.70@2.15
Pocahontas..	2.00	2.25	1.75
West Virginia splint....	2.00	2.25	1.75

DETROIT

Inadequacy of Detroit's coal supply stimulates appeal to Federal fuel director for relief. Assistance is promised. Lake shipments are heavy.

Bituminous—Failure to receive coal, replenishing stocks consumed, is given as the reason for the closing of about 75 manufacturing plants in Detroit during the week. While most of these are small industries, several are reported to have been employed in manufacture of goods under war contracts. The situation in Detroit has become so strained that a delegation representing the municipal government and the Detroit Board of Commerce went to Washington to make an urgent appeal to Fuel Director Garfield for assistance before the coming of cold weather.

Detroit's deficiency in supply in comparison with other years is placed at 262,000 tons, of which 236,000 tons represents a shortage in bituminous coal. The fuel administration department promised steps would be taken at once to increase the movement of coal to Detroit. At present the only shipments coming this way are consignments to apply on contracts arranged before the Government's mine prices were announced.

Retail dealers have little stock and should there be a sudden drop in temperature, much suffering would ensue.

Anthracite—The deficiency in supply of anthracite is even more serious than in the case of soft coal. Retail dealers are limiting sales and restricting them to customers with whom they have dealt in previous years. Some firms are refusing all orders and attempting to fill those previously booked from the small shipments they receive. Much difficulty is being encountered, the retailers say, in the effort to calculate the margin permitted them on sales.

Lake Trade—Coal for shipment to the upper lakes is moving in good volume. In September, 4,609,366 tons of soft coal were loaded at Lake Erie ports. Of this 1,195,434 tons were carried to Canadian ports, 3,413,932 tons to American ports. More than 3,000,000 tons went to docks on Lake Superior and 926,063 tons to ports on Lake Michigan. Vessel capacity in ample amount is being offered to handle all coal cargoes as rapidly as they are received at loading docks.

COLUMBUS

The coal trade in Ohio is more muddled than ever before. Every community is crying for fuel. State officials are powerless to divert Lake coal, excepting under the most urgent circumstances.

With the priority Lake shipment order still in full effect and various communities in Ohio crying for an immediate supply of coal, the situation is more mixed up than ever before. Indications point to an acute fuel famine at the first cold snap and local authorities are at a loss to remedy the situation.

Hundreds of appeals have been received by the Clearing House and in quite a few instances coal has been secured. But with winter cold fast approaching, the situation is fraught with danger and it is believed by many that acute suffering will result unless immediate steps are taken. Railroads are using a large proportion of the tonnage that does not find its way to the lakes. Public utility plants are running from hand to mouth, so to speak, and practically no schools nor churches have any stocks at all. Retail prices are still firm at former levels and the rules of the federal authorities will have little effect on prices. Hocking lump is selling from \$5.25 to \$5.50 and West Virginia splints at \$6.25 to \$6.50. Pocahontas, which is in good demand, and quite scarce, is retailing at \$7. There is little anthracite to be had in the local market.

Production has been exceedingly good during the week, according to reports received from all mining districts in Ohio. The Hocking Valley produced about 85 per cent. of normal and the same figures are reported from Pomeroy Bend. Eastern Ohio is still hampered with a rather short car supply.

Prices on short tons f.o.b. mines are as follows:

	Hocking	Pomeroy	Eastern Ohio
Bescreened lump.....	\$2.25	\$2.60	
High and a quarter.....	2.25	2.60	\$2.25
Three-quarter inch.....	2.25	2.60	2.25
Nut.....	2.25	2.60	2.25
Eq. 2.....	2.25	2.60	
Five run.....	2.00	2.25	2.00
Nut, pea and slack.....	1.75	2.00	1.75
Coarse slack.....	1.75	2.00	1.75

CINCINNATI

Actual scarcity of coal is being experienced, with heavy demand from all quarters. Prices at mines are as prescribed by Government, but the coal is not available.

In spite of the fact that its location makes its fuel supply the best in the country, potentially, Cincinnati is now experiencing an actual shortage of coal. This is due in part to the extensive shipments going through this gateway to the North, and in part to the inability of the mines to forward enough coal to meet the demand. Only a few of the city's retailers are able to fill any orders from the public, while many large industries are faced with the necessity of closing down unless fuel can be had soon.

The supply of coal at city and other public institutions is extremely limited, considering the fact that winter is at hand, and the situation on the whole is one presenting many elements of trouble. Prices are, naturally, a secondary consideration, but as far as can be ascertained, the figures set by the Government are being maintained at the mines. Retailers, on the other hand, assert their inability to sell coal at prices computed on the basis fixed by the Government, even if they were able to get it. A low stage of the Ohio River, rendering it impossible to float coal down, accentuates the shortage.

LOUISVILLE

Resumption of operations in southeastern Kentucky-Tennessee field causes general rejoicing. Production will be sub-normal, but will help situation greatly. Retail trade in confusion.

Resumption of operations in the southeastern Kentucky-Tennessee field after nearly two months of inactivity will result in an immediate improvement in the situation in this market. There will be no coal produced that is not already sold, however, for probably about two months. Many hundreds of orders for large amounts have been declined in the last week with the statement that no orders could be accepted until those on the books were cleared up. With it definitely ascertained that the thin seam operations in this field could go on the Jellico basis, \$2.15, \$2.40 and \$2.65, the operators are going forward with confidence.

Western Kentucky reports a continued demand from industrial consumers for more coal than can possibly be supplied. During the last week or so there has been more than the usual amount of confiscation of coal by the railroads. Buyers from North Central corporations have been besieging the sales offices in Louisville of coal companies operating both in eastern and western Kentucky, but with nominal success.

BIRMINGHAM

Demand for coal brisk, with such business being booked at the new price schedule as operators can anticipate taking care of. Production slowly increasing but not in keeping with the abnormal requirements. Shortage of labor and irregularity of miners at work cripples the output.

Though the new Government schedules are not altogether satisfactory to Alabama operators, little complaint is heard, and such proportion of the abnormal demand for coal is being taken care of as the mines can reasonably expect to handle in line with deliveries asked for. Consumers are now coming to the realization of the fact that the scarcity of coal is a more serious feature than the price, and the need of fuel is so acute that many offers of premiums over Government prices are being made, which, of course, could not be accepted were the coal available. The new figures on Alabama coal at the mines are as follows:

	Prepared Sizes	Mine-Run	Slack or Screenings
Big Seam.....	\$2.45	\$2.15	\$1.85
Pratt, Jagger, Jefferson, Nickel Plate, Coal City.....	2.65	2.35	2.05
Cahaba, Black Creek, Brookwood, Blue Creek.....	3.10	2.85	2.45
Corona.....	2.75	2.40	2.05
Montevallo.....	4.00	2.40	2.15

The above prices are based on September wage schedule, and Administrator Garfield is understood to have promised further revision sufficient to absorb the increase in wages granted the miners on Oct. 1. Producers are also authorized to issue new billing against customers to whom sales were made based on prices of Aug. 21.

Retailers have not yet been apprised of the schedule of prices to be charged the householder, and in the meantime are filling orders at the prices which have prevailed for some time—\$5.50 to \$6.25 for domestic lump and nut. Orders are restricted to immediate requirements. State Fuel Administrator Samuel P. Kennedy has been in con-

ference with Government officials to acquaint himself with the details for formulating price schedules for the retailers and will soon appoint the committees in the various cities of the state, who will fix the prices for their respective districts. Much opposition is expressed to schedules being made based on the margin of profits for the year 1915, it being contended that profits were very small during that year and actual losses were often sustained.

Coke

CONNELLSVILLE

Slightly greater market movement. Priority Board orders full car supply. Production and shipments substantially unchanged.

Offerings of furnace coke in the open market, for spot shipment, have been slowly increasing, and consumers have been able to pick up odd lots, a few carloads at a time, from day to day. The offerings, while increasing somewhat, are much less than the demand. Production and shipments are approximately the same as formerly and the greatly decreased spot offerings are attributable to producers making heavy shipments on contracts, at higher than the fixed price. The furnaces have had such a hard time that they are quite willing to accept shipments in excess of their current consumption, and the condition of excess shipments to some furnaces while others must restrict output may not be entirely corrected until the fuel administration surveys the situation in detail.

The Priority Board has issued an order upon the railroads to furnish 100% car supplies to the Connellsville coke region, this order to take precedence even over the order of a few weeks ago giving priority to Lake coal shipments. Last June the Commission on Car Service issued a similar order in favor of Connellsville coke, which was soon lost sight of. The new order has more authority, but the probability is that full car supplies would uncover a labor shortage so that shipments would not greatly increase.

The new wage scale has been in effect since Oct. 1 and no change in labor conditions is noted in consequence. The new mining rate is \$2.15, or 16c. advance, per 100 bu., mining and loading room and rib coal. Most other jobs are advanced 6 to 8%, but a few are unchanged, and there is no change in rates for forking cars.

We note a number of small transactions in spot furnace coke at the fixed price of \$6 per net ton at mine, but practically nothing has been done in foundry coke as the differential for foundry coke has not been established and at present it could not be sold at above the \$6 price fixed on coke in general. We quote the market simply at \$6 for any grade of coke, whether sold by producer or jobber.

Contrary to expectations previously expressed, the prospect now is that the fuel administration will allow brokers to charge an advance in selling coke. A committee of Pittsburgh jobbers went to Washington early last week and returned with the view that a brokerage would be allowed.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Sept. 29 at 347,408 tons, a decrease of 7694 tons, and shipments at 360,182 tons, an increase of 14,848 tons.

Buffalo—The trade is at a standstill, so far as free coke is concerned. With the making of the regulation price the ovens announced that they had contracts enough to take their entire output and are offering none to outside customers. The price is nominally \$6 with the freight of \$1.85 added, but jobbers and oven agents say that no division of prices has been made, as no occasion for it has arisen. Iron ore receipts by Lake for the week were 300,505 gross tons, for September the amount was 1,198,513 tons, and for the season, 5,114,153 tons.

Birmingham—Although it is presumed that the Government will in the near future issue a schedule of prices to govern the sale of Alabama coke, no intimation of such action has been yet received. Based on the Connellsville price of \$6 per net ton ovens, the Birmingham district price would probably be around \$7.50 per ton, as practically all coal entering into coke manufacture in Alabama is washed, and other extra expense is necessary in the preparation and handling of the coal not incident to coke manufacture in the Connellsville district. Although there is a strong demand for coke and the supply is limited, foundry grades sold as low as \$10 per net ton the past week, a decline of \$4 to \$5 per ton over a week ago. There are no quotations being made on furnace coke, but any available tonnage would bring \$7.50 to \$8 per ton ovens.

Middle Western

GENERAL REVIEW

Retailers preparing new prices. Mid-west demand reaches mid-winter proportions, while supply is inadequate. Conditions becoming acute.

While retailers are arranging to establish new prices, to conform with the order issued by the fuel administrator, few dealers have, up to this writing, been able to establish a price basis and as a result most sales are being made at the same price as has prevailed for some time past. The new prices will be little, if any, different from those that have been in effect.

Vigorous objections to both the plan itself and the 30 per cent. margin over 1915 have been made by retailers and retail organizations in the Central West. Declarations are made that 1915 was not a normal year either in the coal business or in any other line of industrial effort, and that the cost of materials in many instances has advanced to a point in excess of the margin as laid down by the fuel administrator. To what extent these objections have influenced the bureau into pointing out specifically that changes will be made in the 30 per cent. margin where retailers cannot continue in business under it is not known. The bureau makes clear that the only readjustments that will be recommended will be those that clearly demonstrate that the present cost of the retail coal business is more than 30 per cent. in excess of the 1915 cost.

There is every evidence that a serious shortage of coal confronts numerous sections of the Mid-west territory. Predictions are freely made by shippers that this shortage will be in evidence within 60 days, and that in some sections there is barely 30 days' supply of fuel on hand. The demands on Indiana and Illinois coal shippers are as great as they were at any time during last winter, and due to the shortage of labor less tonnage is being produced than at any time during the past year. The situation becomes more acute each week.

The practically complete elimination of the spot-coal market is having its inevitable effect. The shortage of fuel in many quarters is becoming so serious that the necessity for a modification of the fixed prices becomes more evident all the time. Production in southern Illinois has slumped to a great extent. Shippers and operators complain that the miners are making too much money, and the men are seizing every excuse to take a holiday. The county fair at Benton, Ill., seriously interfered with the operation of the mines in that field the past week, and some of the companies report they were only able to operate two days.

This is nothing unusual. If it isn't a county fair it's the circus or a holiday to witness the entraining of a company of soldiers. Operators are in hopes the signing of the new wage scale, on which a compromise agreement has already been reached, will, in a measure, prevent these numerous holidays and have a tendency to stimulate production.

It is understood that a clause has been inserted in this new agreement, which specifies that a day man absenting himself from the mine, except for sickness, will be penalized to the extent that for the period covered by that particular pay roll the wages will be computed on the old basis or rate instead of the \$5 per 8-hour day minimum as agreed upon. In other words, the workmen stand to lose at the rate of \$1.40 per day, for the total number of days worked in the event of their failure to report at the mine for work on days the mine produces coal, for the period covered by that particular pay—usually two weeks.

CHICAGO

Retailers' stocks in Chicago dangerously low. Indiana and Illinois mines supplying bulk of the city's needs. Shippers swamped with orders.

Notwithstanding the continued mild weather the past week, the demand has been unusually heavy and has reached mid-winter proportions. Householders who have been slow to arrange for their winter supply of fuel are waking up to the fact that winter is almost here and that it is a difficult problem to secure coal in larger quantities than one-ton lots. Price now is a secondary consideration, notwithstanding various instructions issued by the State Council of Defense, the Fuel Administrator, the newspapers and others, weeks ago, that there would be plenty of fuel available prior to cold weather. Dealers' stocks of anthracite, Pocahontas and other high-grade Eastern coals are depleted, and no

promises are being made by either the shippers or the retailers that the supply will be adequate. In fact, most of the dealers are asking their customers to protect themselves by using other coals.

The shortage of labor continues to be the greatest drawback to the securing of even an average tonnage production. Indiana and southern Illinois mines are supplying the bulk of the coal for the city's requirements.

The Franklin County mines are producing at least 25 per cent. less coal now than during the summer months—the loss being attributed to the shortage of labor and general inefficiency of the men. The annual county fair, held the past week, also interfered with operations and some mines were only in operation two days. Operations in the counties of Saline, Williamson and other southern Illinois fields make the same reports with respect to the general inefficiency of the workmen.

The car supply in the Indiana field is down to half the daily requirements of the mines, and some of the larger companies report a loss of 50 per cent. in production during the past two weeks. Coal shortages are reported at several Indiana cities, and in some of the large manufacturing centers concerns are buying coal for their employees and selling it to them at wholesale prices. Retail dealers in Terre Haute claim they are unable to figure out a satisfactory price on the basis fixed by Doctor Garfield, and a few have suspended business entirely.

The resumption of work in the Kentucky mining region will afford little relief to the Chicago market and territory adjacent, as most of the coal is badly needed in markets nearer the mines.

Anthracite arrivals are practically nil, and dealers are advising their customers to substitute other coals as they have no assurance from the wholesaler that the supply will be sufficient to furnish but a small per cent. of the needs of the householders. This also covers the general situation with respect to Pocahontas and other West Virginia and Ohio coals usually sold in vast quantities in this territory.

Quotations in the Chicago market are as follows, per net ton f.o.b. cars at mines:

	Williamson and Franklin	Saline and Harrisburg	Fulton and Peoria	Springfield	Cartersville	Grundy, La-Salle, Bureau and Will
Steam lump.....	\$2.20@2.35	\$2.20@2.35	\$2.20@2.35	\$2.20@2.35	\$2.20@2.35	\$2.65@2.80
Domestic lump.....	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Egg or furnace.....	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Sm't egg or nut.....	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Stove.....	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Chestnut.....	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Pea.....	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Washed egg.....	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Washed stove.....	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Washed nut.....	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Mine-run.....	1.95@2.10	1.95@2.10	1.95@2.10	1.95@2.10	1.95@2.10	2.40@2.55
Screenings.....	1.70@1.85	1.70@1.85	1.70@1.85	1.70@1.85	1.70@1.85	2.15@2.30
Washed slack.....	1.70@1.85	1.70@1.85	1.70@1.85	1.70@1.85	1.70@1.85	2.15@2.30

	Clinton and Sullivan	Knox and Greene	Eastern Kentucky	Pocah. and W. Va.	Penna.	Hocking	West Va. Splint
Dom. lump.....	\$2.20@2.35	\$2.20@2.35	\$2.65@2.80	\$2.25@2.40	\$2.25@2.40	\$2.60@2.75	\$2.40@2.55
Steam lump.....	2.20@2.35	2.20@2.35	2.65@2.80	2.25@2.40	2.25@2.40	2.60@2.75	2.40@2.55
Egg.....	2.20@2.35	2.20@2.35	2.65@2.80	2.25@2.40	2.25@2.40	2.60@2.75	2.40@2.55
Sm't egg or nut.....	2.20@2.35	2.20@2.35	2.65@2.80	2.25@2.40	2.25@2.40	2.60@2.75	2.40@2.55
Mine-run.....	1.95@2.10	1.95@2.10	2.40@2.55	2.00@2.15	2.00@2.15	2.35@2.50	2.15@2.30
Screenings.....	1.70@1.85	1.70@1.85	2.15@2.30	1.70@1.85	1.75@1.90	2.10@2.25	1.90@2.05

MILWAUKEE

No change in the price of anthracite, despite the Government's profit edict. Increased receipts makes outlook for an adequate supply somewhat brighter.

Government price control has thus far had no effect upon the price of anthracite in this market. Dealers continue to hold that present prices are practically the same as those fixed by the Government, plus the cost of handling and delivery. Nothing is said of the ruling that the rate of profit should be the same as that of 1915, plus 30 per cent.

The State Council of Defense is delving into things, however, and it is said that if no reduction in price is forthcoming it will summon Milwaukee dealers to Madison to go over the situation. The dealers will be called upon to explain why, if reductions are conceded at other places, none are possible at Milwaukee.

Increased receipts of hard coal make the prospect of an adequate supply somewhat brighter, but dealers are flooded with orders and until this strain is lessened they cannot be expected to entertain an optimistic spirit.

W. N. Fitzgerald, state coal administrator, has returned from a tour of the coal mines and distributing centers and is preparing a report to the governor. He says everything is being done to provide ample supplies for the Northwest and that while the situation is complex he is inclined to the belief that there will be coal for all.

ST. LOUIS

St. Louis market practically without coal for sale. Williamson and Franklin County oversold for many weeks, and Standard tonnage almost eliminated. Movement extremely slow, cars short, and general condition critical. Small eastern shipments.

The long anticipated time has arrived in the St. Louis market when it is almost impossible to buy coal of any kind in carload.

Williamson and Franklin County mines are not accepting orders. They are from 6 to 8 and 10 weeks behind in shipments, with no possible chance of getting caught up, on account of the contracts that are pushing them, the labor and car shortage, and the excessive demand made by railroads for company fuel.

The average consumer knows nothing about the serious state of affairs and the probability is that there will be an actual coal famine in the Middle West within the next 30 to 60 days.

At the present time it is impossible for the country trade to get Williamson and Franklin County coal as far as the Southwest is concerned.

There are no immediate prospects that the conditions will better, and consumers are forced to look to other fields.

The operators producing in the Arkansas anthracite fields are asking enormous prices for their coal on account of the Government not fixing the price on this fuel.

There is going to be an actual coal famine in some country sections at once, and this will extend throughout the winter, for the reason that in many places there are no through rates for the shipping of Standard coal.

Unless something is done to remedy the condition in the Standard field at once, there are no prospects for anything except conditions more serious.

There has been a small tonnage of anthracite moving in the past week, no smokeless to amount to anything, and very little Arkansas.

The retail condition is beyond conception. Everybody is clamoring for coal, and the wealthy people who refused to buy in the summer are insisting on getting the preference and their winter supply in at once.

working a detriment to the people of the working section of the city.

As a rule steam plants have coal in storage and are able to get by on the steam size, which at the present time seems to be in sufficient volume to take care of the demand, but at that, there is a call for steam sizes that is not readily met.

The prevailing price per net ton f.o.b. mine is:

	Williamson and Franklin Co.	Mt. Olive and Staunton	Standard
6-in. lump.....	\$2.35	\$2.35	\$2.35
3x6-in. egg.....	2.35	2.35	2.35
2x3-in. nut.....	2.35	2.35	2.35
No. 2 nut.....	2.35	2.35	2.35
No. 3 nut.....	2.35	2.35	2.35
No. 4 nut.....	2.35	2.35	2.35
No. 5 nut.....	1.85	1.85	1.85
2-in. screen.....	1.85	1.85	1.85
2-in. lump.....	.....	.....	.....
3-in. lump.....	.....	.....	.....
Steam egg.....	.....	.....	.....
Mine run.....	2.10	2.10	2.10
Washed:			
No. 1.....	2.35	2.35	2.35
No. 2.....	2.35	2.35	2.35
No. 3.....	2.35	2.35	2.35
No. 4.....	2.35	2.35	2.35
No. 5.....	1.85	1.85	1.85

Williamson & Franklin Co. rate is 87½c.; other fields, 72½c.

Current Prices—Materials and Supplies

IRON AND STEEL

FIG IRON—Below are the present quotations, with a comparison of a month and a year ago:

	CINCINNATI	Oct. 8, 1917	One Month Ago	One Year Ago
No. 2 Southern foundry....			\$49.90	\$17.40
No. 2 Northern foundry....			56.25	20.25
NEW YORK				
No. 2X Northern foundry..			52.50	19.50
No. 2 plain Northern foundry			52.00	19.25
No. 2 Southern foundry....			52.25	19.50
BIRMINGHAM				
No. 2 Southern foundry....			47.00	14.50
CHICAGO				
No. 2 Northern foundry....	\$33.00		55.00	18.50
PITTSBURGH				
Bessemer iron*	36.30		52.95	22.95
Basic iron*	33.00		50.95	19.95

*These prices include the freight charge from the valley to the Pittsburgh district. †Delivered Tidewater, New York.

Note—On Sept. 24 the President approved the new schedule of steel prices, that of pig iron being set at \$33. Cincinnati, New York and Birmingham are not quoting prices until the differentials have been determined by the Government.

STRUCTURAL MATERIAL—The following are the base prices, f.o.b. mill, Pittsburgh, together with the quotations per 100 lb. from warehouses at the places named:

	Pitts- burgh 1917	New York— Oct. 8, 1 Yr. Ago	St. Louis	Chi- cago	San Fran- cisco	Dallas
Beams, 3 to 15 in.	\$4.50	\$5.25	\$2.50	\$5.05	\$5.00	\$7.75 \$6.00
Channels, 3 to 15 in.	4.60	5.25	2.50	5.05	5.00	7.75 6.00
Angles, 3 to 6 in. 1/4 in. thick	4.50	5.25	2.50	5.05	5.00	7.75 6.25
Tees, 3 in. and larger	4.50	5.30	2.50	5.05	5.05	7.75 6.25
Plates	9.00	10.00	2.90	10.05	8.00	10.00 9.00

BAR IRON—Prices in cents per pound at cities named are as follows:

	Pittsburgh	Cincinnati	St. Louis	Denver	Birmingham
Oct. 8, 1917....	4.00	4.65	4.55	4.85	5.50

NAILS—Prices per keg from warehouse in cities named:

	Mill, Pittsburgh	Cincinnati	St. Louis	Denver	Birmingham	San Francisco
Wire	\$3.50	\$4.00	\$4.00	\$4.05	\$4.10	\$4.60
Cut	3.75	4.00	5.00			6.15

TRACK SUPPLIES—Prices are base per 100 lb. f.o.b. Pittsburgh, and from warehouse at cities named:

	Mill, Pittsburgh	Chicago	St. Louis	Denver	Birmingham
Standard railroad spikes, 1/2 in. and larger....	\$7.00	\$5.00	\$5.75	\$4.80	\$8.00
Track bolts or nuts, 7/16 to 1 in.	7.00 to 8.00	6.25	Premium	5.55	6.75
Standard section angle bars, 3/4 to 1 in.	3.75 to 4.00	4.50	Premium	5.10	

COLD DRAWN STEEL SHAFTING—From warehouse to consumers requiring fair-sized lots, the following discounts held on Apr. 30, 1917:

	Cleveland	Cincinnati	St. Louis	Denver	Birmingham
List + 10%	+15%	+10%	+40%	+30%	

HORSE AND MULE SHOES—Warehouse prices per 100 lb. in cities named:

	Mill, Pittsburgh	Cincinnati	St. Louis	Denver	Birmingham
Straight	\$4.75	\$6.75	\$7.00	\$7.75	\$7.00
Assorted	4.90	7.25	7.15	8.00	7.50

CAST-IRON PIPE—The following are prices per net ton for carload lots:

	New York			Birming-	Chi-	St.	San Fran-	
	Oct. 8, 1917	1 Mo. Ago	One Yr. Ago	ham	cago	Louis	cisco	Dallas
4 in.	\$68.50	\$68.50	\$34.00	\$63.00	\$68.50	\$64.00	\$76.00	\$72.00
6 in. and over	65.50	65.50	31.00	60.00	65.50	61.00	73.00	69.00
Gas pipe and 16-ft. lengths are \$1 per ton extra.								

Gas pipe and 16-ft. lengths are \$1 per ton extra.

STEEL RAILS—The following quotations are per 100 lb. f.o.b. Pittsburgh and Chicago for carload or larger lots. For less than carload lots 5c. per 100 lb. is charged extra:

	Pittsburgh	Chicago
	Oct. 8, 1917	Oct. 8, 1917
Standard bessemer rails....	\$38.00	\$33.00
Standard openhearth rails....	40.00	35.00
Light rails, 8 to 10 lb....	83.00 to 84.00*	50.00
Light rails, 12 to 14 lb....	82.00 to 83.00*	49.00
Light rails, 25 to 45 lb....	75.00 to 80.00*	47.00

*Demand for light rails active and mills are obtaining premiums. Rolled rails as valuable as new.

OLD MATERIAL—Prices per net ton in Chicago and St. Louis (including delivery to buyer's works and freight transfer charges):

	Chicago	St. Louis
	Oct. 8, 1917	Oct. 8, 1917
No. 1 railroad wrought....	\$36.00	\$31.50
Stove plate	17.25	16.00 to 17.00
No. 1 machinery cast....	25.00	21.00 to 22.00
Machine shop turnings....	17.00	12.00 to 14.00
Cast borings	17.00	13.00 to 14.00
Railroad malleable cast....	30.00	25.00 to 26.50

COAL BIT STEEL—Warehouse price per pound is as follows:

	New York	Birmingham	Denver
	\$0.12	\$0.12	\$0.14

PIPE—The following discounts are for carload lots f.o.b. Pittsburgh, as per basing card of July 2, 1917, for iron pipe; May 1, for steel:

BUTT WELD					
Inches	Steel	Black	Galvanized	Inches	Iron
1/4 to 3.....	49%	35 1/2 %		1/4 to 1 1/2.....	33% 17%
LAP WELD					
2.....	42%	29 1/2 %		2.....	26% 15%
2 1/2 to 6.....	45%	32 1/2 %		2 1/2 to 4.....	28% 15%
7 to 12.....	42%	28 1/2 %		4 1/2 to 6.....	28% 15%
13 and 14.....	32 1/2 %			7 to 12.....	25% 12%
15.....	30%				
BUTT WELD. EXTRA STRONG PLAIN ENDS					
1/4 to 1 1/2.....	47%	34 1/2 %		1/4 to 1 1/2.....	33% 18%
2 to 3.....	48%	35 1/2 %			
LAP WELD. EXTRA STRONG PLAIN ENDS					
2.....	40%	28 1/2 %		2.....	27% 14%
2 1/2 to 4.....	43%	31 1/2 %		2 1/2 to 4.....	29% 17%
4 1/2 to 6.....	42%	30%		4 1/2 to 6.....	28% 16%
7 to 8.....	38 1/2 %	24 1/2 %		7 to 8.....	20% 8%
9 to 12.....	33%	19 1/2 %		9 to 12.....	15% 3%

From warehouses at the places named the following discounts hold for steel pipe:

	New York	Chicago	St. Louis
3/4 to 3 in. butt welded.....	38%	41.9%	41.9%
3/4 to 3 in. lap welded.....	18%	37.9%	21.27%
7 to 12 in. lap welded.....	10%		21.27%
Galvanized			
3/4 to 3 in. butt welded.....	22%	26.9%	19.27%
3/4 to 3 in. lap welded.....	List	23.9%	13.27%
7 to 12 in. lap welded.....	List + 20%		6.27%

Malleable fittings, Class B and C, from New York stock sell at list price. Cast iron, standard sizes, 15 and 5%.

SHOP SUPPLIES

NUTS—From warehouse at the places named, on fair-sized orders, the following amount is deducted from list:

	New York	Cleveland	Chicago	St. Louis
	Oct. 8, 1917	Oct. 8, 1917	Oct. 8, 1917	Oct. 8, 1917
Hot pressed square.. List	\$2.00	\$1.65	\$2.75	\$3.00
Hot pressed hexagon. List	2.00	1.50	3.00	3.25
Cold punched square. List	1.50	1.40	2.50	1.60
Cold punched hexagon List	2.00	1.40	3.00	3.50

Semifinished nuts sell at the following discounts from list price:

	Oct. 8, 1917	One Year Ago
New York	50%	50—10%
Cleveland	50%	60%
Chicago	50%	60—10%
St. Louis	40%	

MACHINE BOLTS—Warehouse discounts in the following cities:

	New York	Cleveland	Chicago	St. Louis
% by 4 in. and smaller.....	30%	35—5%	40—10%	40%
Larger and longer up to 1 in. by 30 in.	15%	25—5%	35—5%	30—5%

WROUGHT WASHERS—From warehouses at the places named the following amount is deducted from list price:

New York..\$1.00	Cleveland..\$3.80	Chicago..\$4.00	St. Louis..\$3.00
For cast-iron washers the base price per 100 lb. is as follows:			
New York..\$5.00	Cleveland..\$4.50	Chicago..\$3.50	St. Louis..\$2.25

RIVETS—The following quotations are allowed for fair-sized orders from warehouse:

	New York	Cleveland	Chicago
Steel 1/4 and smaller.....	30%	30%	40%*
Tinned	30%	30%	40%*

*For less than keg lots the discount is 35%.

Button heads, 3/4, 1 in. diameter by 2 in. to 5 in., sell as follows per 100 lb.:

New York	\$7.00	Cleveland	\$6.85	Chicago	\$5.50
Coneheads, same sizes:					
New York	\$7.10	Cleveland	\$6.95	Chicago	\$5.60

MISCELLANEOUS

GREASES—Prices are as follows in the following cities in cents per pound for barrel lots:

	Chicago	St. Louis	Birmingham	Denver
Cup	6	5.6	7	9 1/2
Fiber or sponge.....	6 1/4	5.9	11	15
Transmission	6 1/4	5.9	9	13
Axle	3 1/2	3.3	4	5
Gear	5	6	9	4 1/2
Car journal	4 1/2	3.75	4 1/2	4

BABBITT METAL—Warehouse prices in cents per pound:

	New York	Chicago	St. Louis	Denver
	Oct. 8, 1917	Oct. 8, 1917	Oct. 8, 1917	Oct. 8, 1917
Best grade	65.00	50.00	47.25	70.00
Commercial	35.00	25.00	24.50	17.00

HOSE—Following are prices of various classes of hose:

	Fire			50-Ft. Lengths 65c. per ft. 40-10%
	Underwriters' 2 1/2-in.	Common, 2 1/2-in.		
	Air			
	First Grade	Second Grade	Third Grade	
1/4-in. per ft.	\$0.55	\$0.30	\$0.25	
Steam—Discounts from list				
First grade... 30%	Second grade... 30-5%	Third grade... 40-10%		

LEATHER BELTING—Present discounts from list in cities named:

	Medium Grade	Heavy Grade
Cincinnati	40%	35%
St. Louis	45%	40%
Denver	40%	45%
Birmingham	40%	35%

RAWHIDE LACING—10% off list.**PACKING**—Prices per pound:

Rubber and duck for low-pressure steam	\$0.77
Asbestos for high-pressure steam	1.54
Duck and rubber for piston packing	.88
Flax, regular	1/4 .66
Flax, waterproofed	.99
Compressed asbestos sheet	.99
Wire insertion asbestos sheet	1.21
Rubber sheet, 1/4	.55
Rubber sheet, wire insertion	.88
Rubber sheet, duck insertion	.44
Rubber sheet, cloth insertion	.25
Asbestos packing, twisted or braided, and graphited, for valve stems and stuffing boxes	1.10
Asbestos wick, 1/2- and 1-lb. balls	.65 to .70

MANILA ROPE—For rope smaller than 1/2-in. the price is 1/2 to 2c. extra; while for quantities amounting to less than 600 ft. there is an extra charge of 1c. The number of feet per pound for the various sizes is as follows: 1/2-in., 8 ft.; 3/4-in., 6 ft.; 1-in., 4 1/2 ft.; 1 1/4-in., 3 1/2 ft.; 1 3/4-in., 2 ft. 10 in.; 2-in., 2 ft. 4 in. Following is the price per pound for 1/2-in. and larger, in 1200-ft. coils:

Boston	\$0.34	New Orleans	\$0.31
New York	.33 1/2	Seattle	.33 1/2
Denver	.34	St. Paul	.34
Kansas City	.33 1/2	Birmingham	.34

WIRE ROPE—Discounts from list price on regular grades of bright and galvanized are as follows:

	New York	One	St. Louis	Chicago	Denver	San Francisco
	Oct. 8, 1917	Year Ago				
Galvanized	10-2 1/2 %	35-2 1/2 %	20-2 1/2 %	20-2 1/2 %	5-2 1/2 %	15 %
Bright	20-2 1/2 %	35-2 1/2 %	20-2 1/2 %	20-2 1/2 %	10-2 1/2 %	5 %

PIPE AND BOILER COVERING—Below are discounts and part of standard lists:

PIPE COVERING		BLOCKS AND SHEETS	
Pipe Size	Standard Thickness Per Lin.Ft.	Thickness	Price per Sq.Ft.
1-in.	.027	1/2-in.	\$0.27
2-in.	.36	1-in.	.30
6-in.	.80	1 1/2-in.	.45
4-in.	.60	2-in.	.60
3-in.	.45	2 1/2-in.	.75
8-in.	1.10	3-in.	.90
10-in.	1.30	3 1/2-in.	1.05
85 % magnesia high pressure			15 % off
Air cells for low-pressure heating and return lines		4-ply	58 % off
		3-ply	60 % off
		2-ply	62 % off

LINSEED OIL—These prices are per gallon:

	New York	Cleveland	Chicago	St. Louis
	Oct. 8, 1917	1 Yr. Ago	Oct. 8, 1917	1 Yr. Ago
Raw in barrels	\$1.26	\$0.75	\$1.30	\$0.75
5-gal. cans	1.36	.85	1.40	.85

WHITE AND RED LEAD in 500-lb. lots sell as follows in cents per pound:

	Red	White
	Oct. 8, 1917	1 Year Ago
	Dry	In Oil
100-lb. keg	13.25	13.50
25- and 50-lb. kegs	13.50	13.50
12 1/2-lb. keg	13.75	14.00
1- to 5-lb. cans	15.25	15.50

CALCIUM CARBIDE—Price f.o.b. cars at warehouse points in Eastern States is \$90 per ton for Cameo, \$95 for Union.**COMMON BRICK**—The prices per 1000 in cargo or carload lots are as follows:

Cincinnati	\$13.50	Birmingham (clay)	\$7.50
St. Louis, salmon	8.00	Birmingham (shale)	8.50
Denver	8.00		

FUEL OIL—Price variable, depending upon stock. New York quotations not available owing to this fact. In Chicago and St. Louis the following prices are quoted:

Domestic light, 22-26 Baumé	Chicago 7 3/4 c.	St. Louis 8 5 c.
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Note—There is practically no fuel oil in Chicago at present time.

OIL—Price per 50-gal. bbl. is as follows:

City	Fuel	Black	Red Engine	Steam Cylinder	Gasoline
Seattle	\$4.45	\$6.25	\$11.00	\$21.00	\$10.25
Los Angeles	1.45	6.50	12.00	26.00	10.00
Denver	3.25	8.75	17.00	24.00	12.00
St. Paul	3.00	5.50	11.00	17.50	10.05
Cincinnati	5.00	5.50	10.50	17.00	12.00
Boston	5.25	8.00	12.50	18.75	12.50
Kansas City	6.95	4.35	10.35	17.35	10.15

Note—Standard prices of oil are necessarily difficult to give. Those above are for average grades.

PREPARED ROOFINGS—Standard grade rubbered surface, complete with nails and cement, costs per square as follows in New York and Chicago:

	1-Ply	2-Ply	3-Ply
	c.l.	c.c.l.	c.l.
No. 1 grade	\$1.15	\$1.40	\$1.45
No. 2 grade	1.10	1.25	1.25
Asbestos asphalt-saturated felt (14 lb. per square) costs \$6.50 per 100 lb.			
Slate-surfaced roofing (red and green) in rolls of 108 sq.ft. costs \$1.85 per roll in carload lots and \$2.10 for smaller quantities.			
Shingles, red and green slate finish, cost \$4.75 per square in carloads, \$5 in smaller quantities, in Philadelphia.			

ROOFING MATERIALS—Prices per ton f.o.b. New York or Chicago:

	Carload Lots	Less Than Carload Lots
Tar felt (14 lb. per square of 100 sq.ft.)	\$61.00	\$62.00
Tar pitch (in 400-lb. bbl.)	15.00	16.50
Asphalt pitch (in barrels)	29.00	30.50
Asphalt felt	60.00	62.00

CORRUGATED SHEETS—Price of corrugated sheets (2 1/2-in. corrugations) in cents per pound:

Gage	Birmingham	St. Louis	Denver*
18-20 Black		\$0.092	
28 Black		.094	\$6.80
28 Galvanized	\$0.09	.113	10.00
18-20 Galvanized			11.25

*Price per square of 100 sq.ft.

HOLLOW TILE—The price per 1000 in carload lots f.o.b. mine is as follows:

	4 x 12 x 12	8 x 12 x 12
Cincinnati	\$68.80	\$129.00
St. Louis	60.00	110.00
Denver, per ton	90.00	170.00
Birmingham	52.00	97.50

LUMBER—Price of yellow pine per M in carload lots:

	1-In. Rough, 10 In. x 16 Ft.	2-In. T. and G. 8 x 8 In. x 20 Ft.
Denver	\$44.00	\$40.00
St. Louis	36.50	35.50
Birmingham	22.00	21.00

Lumber—Price per M in carload lots:

	1-In. Rough, 10 In. x 16 Ft. and Under	2-In. T. and G. 10 In. x 16 Ft. Fir
	Y.P.	Hemlock
Kansas City	\$44.00	\$43.00
Seattle	18.50	18.50
New Orleans	38.00	
St. Paul		51.00
	8 x 8-In. x 20 Ft. and Under	12 x 12-In. 20 Ft. and Under
	Y.P.	Fir
Kansas City	\$39.00	\$35.00
Seattle	18.50	18.50
New Orleans	28.00	
St. Paul		40.00

COPPER WIRE—Prices per 1000 ft. for rubber-covered wire:

No.	Single	Double	Duplex	Single	Double	Duplex	Single	Double	Duplex
14	\$12.25	\$15.20	\$29.75	\$14.00	\$16.00	\$28.00	\$15.80	\$17.90	\$36.80
10	24.50	27.70	54.95	28.30	31.80	63.85	30.80	34.30	67.60
8	34.90	38.50	76.80	40.70	44.70	88.90	42.85	46.85	
6		59.10			69.10		69.60	74.10	
4		85.15			110.35		102.85	106.50	
2		127.50			161.00		136.00	139.00	
1		165.35			211.00		201.00	209.50	
0		198.35			256.50		276.00	285.00	
00		267.05			316.00		317.00	330.00	
000		327.35			385.00		417.00	478.50	
0000		399.60			469.50		508.00	566.00	

EXPLOSIVES—Price per pound in 200-lb. lots at cities named:

	Low Freezing 20%	40%	Gelatin 60%	80%	Black Powder*
New York		\$0.26 1/2	\$0.33 1/2		\$2.35
Boston			.33 1/2	.40 1/2	
Kansas City	\$0.19	.25 1/2	.32 1/2	.42 1/2	
New Orleans	.20 1/2	.24 1/2	.29 1/2		
Seattle	.17 1/2	.23 1/2	.29 1/2		
St. Paul	.19	.25 1/2	.32 1/2	.42 1/2	
St. Louis	.15 1/2	.21 1/2	.31 1/2	.38 1/2	1.95
Denver	.18	.24 1/2	.31 1/2	.41 1/2	2.55
Los Angeles	.19	.25	.32 1/2		

*75 %.

FREIGHT RATES—On finished steel products in the Pittsburgh district, including plates, structural shapes, merchant steel, bars, pipe fittings, plain and galvanized wire nails, rivets, spikes, bolts, flat sheets (except planished), chains, etc., the following freight rates are effective in cents per 100 lb.:

Baltimore	15.4	Minneapolis	32.9
Boston	18.9	New Orleans	30.7
Buffalo	11.6	New York	16.9
Chicago	18.9	Pacific Coast (all rail)	75.0
Cincinnati	15.8	Philadelphia	24.6
Cleveland	10.5	St. Louis	32.9
Denver	68.6	St. Paul	
Kansas City	43.6		